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Patent Trial and Appeal Board
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JOHNS MANVILLE CORPORATION and JOHNS MANVILLE, INC.,
Petitioner,

v.

KNAUF INSULATION, INC. and KNAUF INSULATION SPRL,
Patent Owner.

Case IPR2018-00827
Patent 9,828,287 B2

Before JAMES T. MOORE, KRISTINA M. KALAN, and ELIZABETH M. ROESEL, *Administrative Patent Judges*.

KALAN, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a)

Johns Manville Corporation and Johns Manville, Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") seeking *inter partes* review of claims 1–9 and 16–17 of U.S. Patent No. 9,828,287 B2 (Ex. 1001, "the '287 patent"). Knauf Insulation, Inc. and Knauf Insulation SPRL ("Patent Owner") filed a Preliminary Response. Paper 8 ("Prelim. Resp.").

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). An *inter partes* review may not be instituted "unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Applying this standard to the information presented in the Petition, the Preliminary Response, and the supporting evidence, we determine Petitioner has not established a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition. Therefore, institution of an *inter partes* review is denied.

I. BACKGROUND

A. Related Matters

The parties identify the following civil action as involving the '287 patent: *Knauf Insulation, Inc. v. Johns Manville Corp.*, No. 1:15-cv-00111-WTL-MJD (S.D. Ind. 2015). Pet. 1; Paper 4, 1. Petitioner asserts that the '287 patent contains overlapping subject matter with a number of other patents that are the subject of proceedings before the Office. Pet. 1–2.

B. Petitioner's Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 16, 36, 46, 60):

References	Basis	Claims Challenged
Srinivasan[1] and Worthington[2]	§ 103(a)	1–9 and 16–17
Srinivasan and Gogek[3]	§ 103(a)	1, 4–8, and 16–17
Helbing,[4] Worthington, and Srinivasan	§ 103(a)	1–9 and 16–17
Helbing, Gogek, and Srinivasan	§ 103(a)	1, 4–8, and 16–17

Petitioner supports its challenges with a Declaration of Dr. Frederick J. Hirsekorn. Ex. 1005.

C. The '287 Patent (Ex. 1001)

The '287 patent, titled "Binders and Materials Made Therewith," relates to binders to produce or promote cohesion in non-assembled or loosely assembled matter. Ex. 1001, at [54], [57]. The binders of the '287 patent may be used in a variety of fabrication applications, and may be formaldehyde free. *Id.* at 1:62–65, 2:6–7. Generally, the binders may contain ester and/or polyester compounds, sodium or potassium salts of inorganic acids, and may include the product of a Maillard reaction, which

[1] U.S. Patent App. Pub. No. 2005/0059770 A1, published March 17, 2005 (Ex. 1003, "Srinivasan").
[2] U.S. Patent No. 3,513,001, issued May 19, 1970 (Ex. 1004, "Worthington").
[3] U.S. Patent No. 2,965,504, issued December 20, 1960 (Ex. 1009, "Gogek").
[4] U.S. Patent App. Pub. No. 2005/0202224 A1, published Sept. 15, 2005 (Ex. 1008, "Helbing").

reactants may include an amine reactant reacted with a reducing-sugar carbohydrate reactant. *Id.* at 2:12–46.

The '287 patent provides numerous examples of binders and the procedure for preparing those binders. *Id*. at 55:52–73:23. The claims of the '287 patent are directed to a thermal or acoustical fiberglass insulation material comprising a collection of glass fibers and a binder with various characteristics. *Id.* at 88:28–90:22.

D. Illustrative Claim

The '287 patent includes 17 claims; claims 1, 8, and 9 are the only independent claims. Claim 1 is illustrative of the challenged claims and is reproduced below, with additional numbering as added by Petitioner:

> 1. [1.1] A thermal or acoustical fiberglass insulation material comprising:
> (a) [1.2] a collection of glass fibers; and
> (b) [1.3] a binder disposed on the collection of glass fibers, wherein the binder comprises [1.4] i) at least one reaction product of a reducing sugar reactant and an amine reactant, [1.5] wherein the percent by dry weight of the reducing sugar reactant with respect to the total weight of reactants ranges from about 73% to about 96%, [1.6] ii) a silicon-containing coupling agent, and [1.7] iii) optionally, a corrosion inhibitor, [1.8] wherein the fiberglass material comprises less than 99% by weight and more than 75% by weight glass fibers, [1.9] and wherein the fiberglass material has a density of from about 0.4 lbs/ft^3 to about 6 lbs/ft^3.

Ex. 1001, 88:28–43.

II. DISCUSSION

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable interpretation in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see Cuozzo Speed*

Tech., LLC v. Lee, 136 S. Ct. 2131, 2142–46 (2016) (upholding application of the broadest reasonable interpretation standard in an *inter partes* review). Under that standard, we generally give claim terms their ordinary and customary meaning as would be understood by a person of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Petitioner proposes express constructions for two claim terms—"amine reactant" and "the binder contains about 4 percent to about 5 percent nitrogen by mass as determined by elemental analysis." Pet. 8–13. After considering the parties' arguments and the evidence before us, we determine it is not necessary to construe any claim term expressly to determine whether to institute trial. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy").

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art ("POSITA") "would have been someone with a Ph.D. in Chemistry and 3–5 years of industry experience in binder development for insulating *or analogous products*, or someone with a Bachelor of Science degree in Chemistry or Chemical Engineering and 10 or more years of experience in binder development for the manufacture of insulating *or analogous products*." Pet. 10 (citing Ex. 1005 ¶ 38) (emphasis added). Patent Owner does not dispute Petitioner's contention regarding the level of skill in the art.

We determine that "analogous products," as set forth in Petitioner's definition of a POSITA, is unclear and overly broad. Petitioner does not explain what it means by "analogous products," and the phrase "insulating

or analogous products" is broader than the field of art to which the claimed method pertains. *Id.* Dr. Hirsekorn explains that the challenged claims of the '287 patent "are directed to thermal or acoustical fiberglass insulation materials made by disposing a binder on a collection of glass fibers." Ex. 1005 ¶ 39. That testimony is consistent with the preamble of claim 1 of the '287 patent, which recites: "[a] thermal or acoustical fiberglass insulation material." Ex. 1001, 88:28.

Accordingly, on this record and consistent with the expert testimony and the language of the '287 patent, we determine that a POSITA would have had a Ph.D. in Chemistry and three to five years of industry experience in binder development for the manufacture of fiberglass insulation products, or a Bachelor's degree in Chemistry or Chemical Engineering and ten or more years of experience in binder development for the manufacture of fiberglass insulation products. Ex. 1005 ¶¶ 38–39.

C. Overview of Prior Art References

1. Srinivasan (Ex. 1003)

Srinivasan generally discloses "[a]n aqueous binder composition" and "the related method of its use for making glass fiber products, especially fiberglass insulation." Ex. 1003, at [57]. Srinivasan describes its composition as "a new formaldehyde-free binder composition." *Id.* ¶ 1. The composition particularly relates to "a water-soluble and substantially infinitely water-dilutable thermosetting (i.e., thermosettable) adduct (or copolymer) of an unsaturated carboxylic acid monomer (i.e., at least on[e] such monomer) and an unsaturated hydroxyl monomer (i.e., at least one such monomer)." *Id.* ¶ 21. Srinivasan includes silanes as coupling agents. *Id.* ¶ 55. It discusses products in which 99–60% by weight will be composed of

glass fibers, and products having a density in the range of less than one pound per cubic foot to forty pounds per cubic foot. *Id.* ¶ 65.

2. Worthington (Ex. 1004)

Worthington discloses thermosetting compositions for use as binders in the making of shell molds or cores and for other purposes for which thermosetting compositions are used, for example, for the production of plastic articles in conjunction with a suitable filler. Ex. 1004, 1:29–35. Worthington's objective is to provide a substitute for phenolic resins and other binders conventionally used in the shell mold process. *Id.* at 1:41–52.

According to Worthington, the thermosetting composition comprises:

> a major proportion by weight of a carbohydrate (preferably the carbohydrate is mixed with a minor proportion of either a mineral acid or a salt liberating such an acid on heating, such as, for example, the ammonium salt of sulphuric or hydrochloric acid), a minor proportion of a carboxylic acid, preferably a polycarboxylic acid, preferably containing additional groups such as hydroxyl or amino groups or an aromatic carboxylic acid with active α carbon atoms, or a mixture of two or more such acids and a still smaller proportion of one or more cross-linking agents and of one or more amines.

Id. at 1:53–65.

Worthington discloses that the ingredients react to form a thermosetting resin-like product that can be used to replace phenol formaldehyde synthetic resins or other materials commonly used in the production of molded products or of shell molds or cores. *Id.* at 3:55–58. Worthington identifies advantages of the disclosed binders over phenol-formaldehyde resins and other materials previously used in the art. *Id.* at 7:11–23.

3. Helbing (Ex. 1008)

Helbing discloses "formaldehyde-free, thermally-curable, alkaline, aqueous binder compositions." Ex. 1008, at [57]. In particular, Helbing's disclosure relates to "thermally-curable, polyester binders for non-woven fibers." *Id.* ¶ 2. Helbing discloses, *inter alia*, a glass fiber product (*id.* ¶ 10), a binder composition including a polyacid component having acid groups and a polyhydroxy component having hydroxyl groups (*id.* ¶¶ 8, 11, 17), use of catalysts capable of increasing the rate of polyester formation that may include an ammonium salt (*id.* ¶ 20), and use of silicon-containing coupling agents (*id.* ¶ 21).

4. Gogek (Ex. 1009)

Gogek relates to moisture resistant refractory blocks having high hardness suitable for use in insulating furnaces. Ex. 1009, 1:14–16. Gogek discloses:

> I have discovered that greatly improved insulating blocks which are highly moisture resistant can be prepared from refractory materials and a binder consisting essentially of a sugar and a chemical adjunct, and I have also discovered that such blocks possess hardness and resistance to breakage and chipping not found in any commercially available refractory block.

Id. at 1:30–36. Gogek discloses that the preferred chemical adjunct is ammonium sulfate. *Id.* at 1:73.

Gogek discloses the following example formulation:

	Parts by weight
Rock wool	90
Asbestos fines	3
Bentonite	3
Dextrose hydrate	2.82
Ammonium sulfate	0.18
Iron oxide	1

Ex. 1009, 2:10–18 (Example 1). Gogek discloses that, to make an insulating block, "the above-named components were slurried in 600 to 1000 parts of water, and the slurry was passed between two moving perforated belts to squeeze out the excess water and compact the undissolved ingredients." *Id.* at 2:19–23. The compressed mass was cut into blocks, which were then baked in kilns. *Id.* at 2:23–26. According to Gogek, blocks made according to this method were resistant to water and exhibited high surface hardness, as compared with blocks made by prior art methods. *Id.* at 2:30–41.

D. Petitioner's Ground 1: Srinivasan and Worthington

Petitioner contends that Srinivasan and Worthington teach the thermal or acoustical fiberglass insulation material limitations of independent claim 1, *i.e.*, that Srinivasan discloses limitations 1.1, 1.2, 1.3, 1.6, 1.8, and 1.9, and that Worthington teaches limitations 1.4 and 1.5 (optional limitation 1.7, Petitioner argues, need not be met). Pet. 19–24. Petitioner relies on Srinivasan and/or Worthington to teach the additional limitations of claims 2–9 and 16–17. *Id.* at 24–35. Petitioner contends that a skilled artisan would have had several reasons to combine the teachings of Srinivasan and Worthington. *Id.* at 17–19 ("Overarching Reasons to Combine Srinivasan and Worthington") (citing Ex. 1005 ¶¶ 67–69).

Patent Owner argues that Petitioner fails to adequately explain its theory of obviousness, and picks and chooses binder components without explanation. Prelim. Resp. 12–20. Patent Owner also argues that Petitioner fails to provide a valid rationale for combining the cited references. *Id.* at 20–27. More particularly, Patent Owner argues that being in the same field of endeavor or analogous does not establish obviousness; that using thermoset material is too broad to explain obviousness; that Petitioner fails

to support its assertion that elements of the cited references could have been predictably combined; and that Petitioner improperly bases its obviousness grounds on the disclosure of the '287 patent and the reexamination of the '445 patent. *Id.* at 21–27. Patent Owner also argues that compatibility does not mean obvious to combine (*id.* at 29) and that a need for formaldehyde-free binders is not a reason to modify Srinivasan or Helbing (*id.* at 31).

First, Petitioner argues that both Srinivasan and Worthington "disclose a thermosetting binder composition, and both do so with a binder containing a reducing sugar and a monomeric carboxylic acid, making the reactants in the similar endeavors related to each other." Pet. 17 (citing Ex. 1005 ¶ 67). In the same vein, Petitioner argues that the Board "found Worthington to be analogous prior art" to Patent Owner's related binder patent, and that therefore, Worthington is analogous art. *Id.* at 18.

Petitioner's argument is deficient in several respects. Analogous art is merely a threshold inquiry as to whether a reference can be considered in an obviousness analysis. Demonstrating that a reference is analogous art or relevant to the field of endeavor of the challenged patent is not sufficient to establish that one of ordinary skill would have had reason to combine its teachings with other prior art in the manner set forth in the claim. *See Securus Techs., Inc. v. Global Tel*Link Corp.*, 701 F. App'x 971, 977 (Fed. Cir. 2017) ("a broad characterization of [prior art references] as both falling within the same alleged field . . . without more, is not enough for [Petitioner] to meet its burden of presenting a sufficient rationale to support an obviousness conclusion"). Mere compatibility of the references is likewise not sufficient. *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993

(Fed. Cir. 2017) (it is not enough to show that "a skilled artisan, once presented with the two references, would have understood that they could be combined").

Second, Petitioner argues that, because Srinivasan "teaches methods lending themselves to the use of thermosetting compositions," and because Worthington "expressly teaches that its methods are appropriate wherever a thermosetting composition may be used," that a "combination of Worthington and Srinivasan is obvious in the context of thermosetting compositions." Pet. 17–18 (citing Ex. 1005 ¶ 68). Petitioner argues that, "as shown below," the challenged claims "represent nothing more than the predictable use of prior art elements from Srinivasan and/or Worthington according to their established functions." *Id.* In its claim-by-claim analysis, Petitioner asserts that one of ordinary skill "would have recognized the benefits of Worthington's thermosetting composition" and "found it obvious to use that composition in the method disclosed by Srinivasan such that flexibility in physical conditions might be increased, the product might last longer in storage, noxious fumes might not be produced, and materials for production might be secured more cheaply." *Id.* at 21 (citing Ex. 1005 ¶ 75).

Petitioner's argument assumes that all thermoset binders are useful in a fiberglass insulation product of the type disclosed in Srinivasan—an assumption that Petitioner fails to support. Petitioner does not compare the thermoset binder disclosed in Worthington with the thermoset binder disclosed in Srinivasan, nor does Petitioner attempt to show that one of ordinary skill in the art would have had a reason to substitute Worthington's binder for the binder disclosed in Srinivasan. *See* Pet. 21; Ex. 1005 ¶ 75.

As noted by Patent Owner, "the cited references teach considerably different binding systems." Prelim. Resp. 19. Srinivasan teaches "a free radical polymerized adduct of a monomeric carboxylic acid component and a monomeric hydroxyl component, polymerized in the presence of a chain transfer agent," for use in "making glass fiber products, especially fiberglass insulation." *Id.*; Ex. 1009, at [57]. On the other hand, Worthington discloses thermosetting compositions for use as binders in the making of shell molds or cores and, for example, for the production of plastic articles in conjunction with a suitable filler, with the objective of providing a substitute for phenolic resins and other binders conventionally used in the shell mold process. Ex. 1004, 1:29–35, 1:41–52.

Moreover, Petitioner does not support, in its claim-by-claim analysis, which elements of the cited references could be predictably combined. For example, in its discussion of claim 1, Petitioner indicates which of the references purportedly discloses each element of claim 1, but does not indicate which of the prior art elements allegedly has a known function, what that function is, and why that function is allegedly predictable. Pet. 19–24; Prelim. Resp. 26. Petitioner and its declarant have not explained sufficiently why one of ordinary skill in the art would have selected Worthington's thermosetting composition for use as a binder in a fiberglass insulation material. Petitioner's reliance on the testimony of Dr. Hirsekorn to support its arguments fails to direct us to evidence supporting that claims 1–9 and 16–17 represent nothing more than the predictable use of prior art elements. Accordingly, we give little weight to Dr. Hirsekorn's testimony. *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."); *Rohm & Haas Co. v. Brotech Corp.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997) (nothing in the Federal Rules of Evidence or Federal Circuit jurisprudence requires the fact finder to credit unsupported assertions of an expert witness).

Third, Petitioner argues that "combining the teachings of the two references would have been well within the skill" of an ordinarily skilled artisan, who would have had a "reasonable expectation of success in fabricating materials based on the teachings of Srinivasan in view of Worthington." Pet. 18 (citing Ex. 1005 ¶ 69). Obviousness, however, requires "a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Moreover, it is Petitioner's burden to demonstrate "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." *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367–1368 (Fed. Cir. 2016) (citations omitted). In this light, the extent of the modifications proposed by Petitioner, the reasons for such modifications, and whether there would be a reasonable expectation of success are not adequately supported. Petitioner merely makes the assertion that it would have been so, and cites to a largely duplicative paragraph of the Hirsekorn Declaration for support. Pet. 18 (citing Ex. 1005 ¶ 69). An unsupported statement that combining the teachings of the two references would have been "well within the skill of a POSA," because the results of reacting a reducing sugar with an amine

reactant "were well-known and predictable" does not meet Petitioner's burden. *Id*.

Finally, Petitioner mentions briefly that the claims of the '445 patent subject to reexamination were found unpatentable, and that the '287 patent overcame an obviousness-type double patenting rejection over the '445 patent claims by terminal disclaimer, and thus "it follows that the '287 Patent claims are similarly unpatentable." Pet. 19 (citing Section III.C). This alone, without any analysis of the similarities and differences between the claims of those patents, does not permit us to reach the conclusion that "it follows" that the '287 patent claims are unpatentable. *See* Prelim. Resp. 27–28.

Although Petitioner attempts to establish reasons to combine the elements of Worthington and Srinivasan (Pet. 17–19), Petitioner does not expressly discuss whether one of ordinary skill in the art would have had a reason to combine the cited teachings in the context of a fiberglass insulation product. The cited paragraphs of the Hirsekorn Declaration (Ex. 1005 ¶¶ 67–69, 74–75) are substantially the same as the Petition (Pet. 17–19, 21) and are deficient for the same reasons as discussed above. Accordingly, we determine that Petitioner's arguments and evidence, whether considered individually or as a whole, do not demonstrate a reasonable likelihood of prevailing on Petitioner's contention that the challenged claims are unpatentable as obvious in view of Srinivasan and Worthington.

E. Petitioner's Grounds 2, 3, and 4

We address Petitioner's remaining three Grounds together, because Petitioner raises substantially similar arguments for all three Grounds, and because our discussion of these three Grounds addresses similar issues.

For Ground 2, Petitioner contends that Srinivasan and Gogek teach the limitations of independent claim 1, *i.e.*, that Srinivasan teaches limitations 1.1, 1.2, 1.3, 1.6, 1.8, and 1.9, and that Gogek teaches limitations 1.4 and 1.5 (optional limitation 1.7, Petitioner argues, carries no patentable weight). Pet. 38–40. Petitioner relies on Srinivasan and/or Gogek to teach the additional limitations of claims 4–8 and 16–17. *Id.* at 41–45. Petitioner contends that a skilled artisan would have had several reasons to combine the teachings of Srinivasan and Gogek. *Id.* at 36–38 ("Overarching Reasons to Combine Srinivasan and Gogek") (citing Ex. 1005 ¶¶ 133–135).

For Ground 3, Petitioner contends that Helbing, Worthington and Srinivasan teach the limitations of independent claim 1, *i.e.*, that Helbing teaches limitations 1.1, 1.2, 1.3, and 1.6, that Worthington teaches limitations 1.4 and 1.5, and that Srinivasan teaches limitations 1.8 and 1.9 (optional limitation 1.7, Petitioner argues, carries no patentable weight). Pet. 50–52. Petitioner relies on Helbing, Worthington, and/or Srinivasan to teach the additional limitations of claims 2–9 and 16–17. *Id.* at 52–60. Petitioner contends that a skilled artisan would have had several reasons to combine the teachings of Helbing with Srinivasan and Worthington. *Id.* at 47–50 ("Overarching Reasons to Combine Helbing with Srinivasan and Worthington") (citing Ex. 1005 ¶¶ 180–183).

For Ground 4, Petitioner contends that Helbing, Gogek and Srinivasan teach the limitations of independent claim 1, *i.e.*, that Helbing teaches limitations 1.1, 1.2, 1.3, and 1.6, that Gogek teaches limitations 1.4 and 1.5, and that Srinivasan teaches limitations 1.8 and 1.9 (optional limitation 1.7, Petitioner argues, carries no patentable weight). Pet. 62–64. Petitioner relies on Helbing, Gogek, and/or Srinivasan to teach the additional

limitations of claims 4–8 and 16–17. *Id.* at 64–69. Petitioner contends that a skilled artisan would have had several reasons to combine the teachings of Helbing with Gogek and Worthington. *Id.* at 60–62 ("Overarching Reasons to Combine Helbing with Gogek and Worthington") (citing Ex. 1005 ¶¶ 256–258).

Patent Owner argues that, for each of the remaining three Grounds, Petitioner fails to adequately explain its theory of obviousness, and picks and chooses binder components without explanation. Prelim. Resp. 12–20. Patent Owner also argues that Petitioner fails to provide a valid rationale for combining the cited references. *Id.* at 20–27. More particularly, Patent Owner argues that being in the same field of endeavor or analogous does not establish obviousness; that using thermoset material is too broad to explain obviousness; that Petitioner fails to support its assertion that elements of the cited references could have been predictably combined; and that Petitioner improperly bases its obviousness grounds on the disclosure of the '287 patent and the reexamination of the '445 patent. *Id.* at 21–27. Patent Owner also argues that compatibility does not mean obvious to combine (*id.* at 29) and that a need for formaldhyde-free binders is not a reason to modify Srinivasan or Helbing (*id.* at 31).

First, for each Ground, Petitioner argues that each reference "is analogous prior art to the claimed subject matter" (Pet. 37, 48, 62). More particularly, Petitioner argues that Srinivasan and Gogek are both "directed to the manufacture of articles by thermosetting a binder composition mixed with loose matter," (*id.* at 36), and that Helbing "is directed to the manufacture of articles by thermosetting a binder composition mixed with loose matter," (*id.* at 47, 60). As discussed above, Petitioner's argument is

deficient in several respects. Analogous art is merely a threshold inquiry as to whether a reference can be considered in an obviousness analysis. Demonstrating that a reference is analogous art or relevant to the field of endeavor of the challenged patent is not sufficient to establish that one of ordinary skill would have had reason to combine its teachings with other prior art in the manner set forth in the claim. *See Securus Techs., Inc.*, 701 F. App'x at 977. Mere compatibility of the references is likewise not sufficient. *Personal Web Techs.*, 848 F.3d at 994.

Second, for Ground 2, Petitioner argues that Srinivasan "teaches methods lending themselves to the use of thermosetting compositions," and that Gogek "discloses just such a composition." Pet. 37 (citing Ex. 1005 ¶ 134). For Ground 3, Petitioner argues that Helbing teaches that its methods "lend themselves to the use of thermosetting compositions" and Worthington suggests that its teachings "are appropriate wherever a thermosetting composition may be used." *Id.* at 48 (citing Ex. 1005 ¶ 181). For Ground 4, Petitioner also argues that Helbing and Srinivasan teach that their methods "lend themselves to the use of thermosetting compositions" and Gogek "discloses just such a composition." *Id.* at 61 (citing Ex. 1005 ¶ 257). Petitioner argues that, as shown or described below, the challenged claims "represent nothing more than the predictable use of prior art elements from [the references] according to their established functions." *Id.* at 36, 47, 61. In its claim-by-claim analysis for Grounds 2 and 4, Petitioner asserts that it would have been obvious to one of ordinary skill in the art to seek various binder formulations that avoid formaldehyde emissions, such as Gogek's binder, and use them in combination with Srinivasan's or Helbing's methods. *Id.* at 39 (citing Ex. 1005 ¶ 140), 63 (citing Ex. 1005 ¶ 264). In its

claim-by-claim analysis for Ground 3, Petitioner asserts that one of ordinary skill "would have recognized the benefits of Worthington's thermosetting composition" and "found it obvious to use that composition in the method disclosed by Helbing for the reasons stated above." *Id.* at 51 (citing Ex. 1005 ¶ 189).

Petitioner's argument assumes that all thermoset binders are useful in a fiberglass insulation product of the type disclosed in the respective primary reference (Srinivasan or Helbing)—an assumption that Petitioner fails to support. Petitioner does not compare the binder disclosed in any of the secondary references with the binder disclosed in the respective primary reference, nor does Petitioner attempt to show that one of ordinary skill in the art would have had a reason to substitute the binder of the secondary reference for the binder disclosed in the respective primary reference. *See* Pet. 39 (citing Ex. 1005 ¶ 140), 51 (citing Ex. 1005 ¶ 189), 63 (citing Ex. 1005 ¶ 264). As noted by Patent Owner, the cited references "teach considerably different binding systems." Prelim. Resp. 19. Srinivasan teaches "a free radical polymerized adduct of a monomeric carboxylic acid component and a monomeric hydroxyl component, polymerized in the presence of a chain transfer agent," for use in "making glass fiber products, especially fiberglass insulation." *Id.*; Ex. 1009, at [57]. Helbing teaches "formaldehyde-free, thermally-curable, alkaline, aqueous binder compositions" relating to "thermally-curable, polyester binders for non-woven fibers." Ex. 1008, at [57], ¶ 2. On the other hand, Worthington discloses thermosetting compositions for use as binders in the making of shell molds or cores and, for example, for the production of plastic articles in conjunction with a suitable filler, with the objective of providing a substitute

for phenolic resins and other binders conventionally used in the shell mold process. Ex. 1004, 1:29–35, 1:41–52. Gogek discloses a binder that uses clay, for use in "moisture resistant refractory blocks having high hardness suitable for use in insulating furnaces." Ex. 1009, 1:14–16.

Moreover, Petitioner does not support, in its claim-by-claim analysis, which elements of the cited references could be predictably combined. For example, in its discussion of claim 1, Petitioner indicates which of the references purportedly discloses each element of claim 1, but does not indicate which of the prior art elements allegedly has a known function, what that function is, and why that function is allegedly predictable. Pet. 38–40 (Ground 2), 50–52 (Ground 3), 62–64 (Ground 4); Prelim. Resp. 26. Petitioner and its declarant have not explained sufficiently why one of ordinary skill in the art would have selected the composition of the secondary reference in question for use as a binder in a fiberglass insulation material of Srinivasan or Helbing. Petitioner's reliance on the testimony of Dr. Hirsekorn to support its arguments fails to direct us to evidence supporting that the challenged claims represent nothing more than the predictable use of prior art elements. *See* Ex. 1005 ¶¶ 133–135, 180–183, 256–258. Accordingly, we give little weight to Dr. Hirsekorn's testimony. *See* 37 C.F.R. § 42.65(a); *Rohm & Haas Co.* 127 F.3d at 1092.

Third, Petitioner argues that "combining the teachings of the [] references would have been well within the skill" of an ordinarily skilled artisan, who would have had a "reasonable expectation of success in fabricating materials based on the teachings of" the respective references. Pet. 37 (citing Ex. 1005 ¶ 135), 48 (citing Ex. 1005 ¶ 182), 61 (citing Ex. 1005 ¶ 258). Obviousness requires "a reason that would have prompted

a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR Int'l Co.* 550 U.S. at 418.

It is Petitioner's burden to demonstrate "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." *Intelligent Bio-Sys., Inc.* 821 F.3d at 1367. In this light, the extent of the modifications proposed by Petitioner, the reasons for such modifications, and whether there would be a reasonable expectation of success are not adequately supported. Petitioner merely makes the assertion that it would have been so, and cites to a largely duplicative paragraph of the Hirsekorn Declaration for support. Pet. 37 (citing Ex. 1005 ¶ 135), 48 (citing Ex. 1005 ¶ 182), 61 (citing Ex. 1005 ¶ 258). An unsupported statement that combining the teachings of the two references would have been "well within the skill of a POSA," because the results of reacting a reducing sugar with an amine reactant "were well-known and predictable" does not meet Petitioner's burden. *Id.*

Finally, regarding Ground 3, Petitioner mentions briefly that the claims of the '445 patent subject to reexamination were found unpatentable, and that "[v]irtually all of the subject matter of the challenged claims of the '287 Patent was present in the claims of the'445 Patent." *Id.* at 49. Petitioner further argues that the claims of the '445 Patent are "actually narrower than the challenged claims of the '287 Patent." This alone, without any analysis of the similarities and differences between the claims of those patents, does not permit us to reach the conclusion that the '287 patent claims are unpatentable. *See also* Prelim. Resp. 27–28.

Although Petitioner attempts to establish reasons to combine the elements of the respective references relied upon (Pet. 36–39, 47–51, 60–63), Petitioner does not expressly discuss whether one of ordinary skill in the art would have had a reason to combine the cited teachings in the context of a fiberglass insulation product. The cited paragraphs of the Hirsekorn Declaration (Ex. 1005 ¶¶ 133–135, 140, 180–183, 189, 256–258, 264) are substantially the same as the corresponding portions of the Petition (Pet. 36–39, 47–51, 60–63) and are deficient for the same reasons as discussed above. Accordingly, we determine that Petitioner's arguments and evidence, whether considered individually or as a whole, do not demonstrate a reasonable likelihood of prevailing on Petitioner's contention that the challenged claims are unpatentable as obvious in view of the prior art cited in Grounds 2, 3, and 4.

III. CONCLUSION

After considering the information presented in the Petition and the Preliminary Response, and the evidence of record, we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to any of the challenged claims of the '287 patent.

IV. ORDER

Accordingly, it is

ORDERED that the Petition is *denied*, and no trial is instituted.

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