

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COLAS SOLUTIONS, INC.,
Petitioner,

v.

BLACKLIDGE EMULSIONS, INC.,
Patent Owner.

Case IPR2016-01031
Patent 7,503,724 B2

SUBMISSION OF NOTICE OF APPEAL

Via PTAB E2E
Patent Trial and Appeal Board

Via Hand Delivery
Director of the United States Patent and Trademark Office
c/o Office of the General Counsel, 10B20
Madison Building East
600 Dulany Street
Alexandria, VA 22313
Via CM/ECF
United States Court of Appeals for the Federal Circuit

Pursuant to 35 U.S.C. §§ 141 and 142 and 37 C.F.R. §§ 90.2(a) and 90.3(a)(1), Petitioner/Appellant, Colas Solutions, Inc., hereby notifies the Board of its Notice of Appeal to the United States Court of Appeals for the Federal Circuit for review of the Final Written Decision (IPR 2016-01031) of the Patent Trial and Appeal Board entered on November 2, 2017. Copies of the Final Written Decision and the Notice of Appeal are attached.

This appeal is being timely filed, i.e. within sixty-three days of the Final Written Decision. *See* 37 C.F.R. § 90.3(a)(1). Simultaneously with this submission, the Notice of Appeal is being filed with the Director of the United States Patent and Trademark Office and the Notice of Appeal and docketing fee of \$500.00 are being electronically filed with the Clerk of Court for the United States Court of Appeals for the Federal Circuit.

Respectfully submitted,

Date: December 28, 2017

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Before MITCHELL G. WEATHERLY, JAMES A. TARTAL, and
TIMOTHY J. GOODSON, *Administrative Patent Judges*.

WEATHERLY, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. BACKGROUND

Colas Solutions Inc. (“Colas” or “Petitioner”) filed a petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 1–12, 15–20, 23–28, and 31–33 (the “challenged claims”) of U.S. Patent No. 7,503,724 B2 (Ex. 1001, “the ’724 patent”). 35 U.S.C. § 311. Blacklidge Emulsions, Inc. (“Blacklidge” or “Patent Owner”) timely filed a Preliminary Response.

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Paper 6 (“Prelim. Resp.”). We instituted an *inter partes* review of claims 1–12, 15–20, 23–28, and 31–33 on the alleged ground of unpatentability under 35 U.S.C. § 103 for obviousness based on the combination of AEMA¹ and Bardesi² in view of Christensen³, Durand⁴, and/or The Asphalt Handbook⁵. Paper 7, 20 (“Decision on Institution” or “Dec.”).

After institution of trial, Patent Owner filed a Patent Owner Response. (Paper 12, “PO Resp.”), and Petitioner filed a Reply (Paper 20, “Reply”). In addition, Patent Owner filed a Motion for Observation on Cross Examination (Paper 28), to which Petitioner filed a Response (Paper 30). Both parties also filed motions to exclude evidence, and the briefing on those motions included oppositions and replies. *See* Papers 24, 27, 31, 32, 34, and 35. A combined oral hearing in this proceeding and Case IPR2016-01032 was held on August 8, 2017, and a transcript of the hearing is included in the record. Paper 37 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has not shown by a

¹ *Asphalt Emulsion: A Basic Asphalt Emulsion Manual*, Manual Series No. 19 (3d ed.) (Ex. 1002, “AEMA”).

² Bardesi, O.-E. & D.A. Paez, *A Novel Generation of Tack Coat Emulsions to Avoid Adhesion to Tyres*, Third World Congress on Emulsions (Ex. 1003, “Bardesi”).

³ Canadian Patent No. 1 152 795, issued Aug. 30, 1983 (Ex. 1005, “Christensen”).

⁴ U.S. Patent No. 5,769,567, issued June 23, 1998 (Ex. 1004, “Durand”).

⁵ *The Asphalt Handbook*, Manual Series No. 4 (1989 ed.) (Ex. 1008, “The Asphalt Handbook”).

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preponderance of the evidence that any of claims 1–12, 15–20, 23–28, and 31–33 of the '724 patent are unpatentable.

B. RELATED PROCEEDINGS

The parties identified as a related proceeding the co-pending district court proceeding of *Blacklidge Emulsions, Inc. v. Russell Standard Corporation*, Case Number cv 1:12-643, N.D. Ohio. Pet. 1. Colas also identifies as related proceedings the district court proceedings of *Colas Solutions, Inc. v. Blacklidge Emulsions, Inc.*, Case Number 1:16-cv-00548, S.D. Ohio, and *Blacklidge Emulsions, Inc. v. Phillips Oil Co. of Central Ohio, Inc.*, Case Number 2:12-cv-00406, S.D. Ohio, and IPR2016-01032 filed by Colas and relating to U.S. Patent 7,918,624 B2. In addition, *inter partes* reviews challenging all claims of the '724 and '624 patents were instituted in IPR2017-01241 and IPR2017-01242, respectively, and remain pending before the Board. *Asphalt Prods. Unlimited, Inc. v. Blacklidge Emulsions, Inc.*, No. IPR2017-01241 (P.T.A.B. October 24, 2017), Paper 23, 25; *Asphalt Prods. Unlimited, Inc. v. Blacklidge Emulsions, Inc.*, No. IPR2017-01242 (P.T.A.B. October 24, 2017), Paper 23, 26.

C. THE '724 PATENT

The '724 patent relates generally to a method of providing an adhesive tack coat between pavement layers. Ex. 1001, 1:13–16. The method includes applying an asphalt emulsion as the tack coat that, when cured, exhibits a relatively hard surface that resists adhering to the tires of construction vehicles but still functions as an adhesive layer. *Id.* at 4:53–67.

Claims 1, 15, 23, and 31 are the independent claims among the challenged claims, with claims 1, 15, and 31 reciting methods for using a tack coat, *id.* at 14:6–35 (claim 1), 15:24–63 (claim 15), 17:10–18:20 (claim

31), and claim 23 reciting a pavement structure that incorporates the tack layer, *id.* at 16:28–40. Claim 1, which is illustrative, recites:

1. A method for bonding a layer of asphalt pavement material comprising asphalt material to a substrate pavement layer comprising paving material, the paving material selected from the group consisting of asphalt material, soil, clay, sand, shell, cement, limestone, fly ash and mixtures thereof, the method comprising:

providing an emulsified composition which includes at least a first phase of an asphalt composition, a second phase of water, emulsifier and a stabilizer, *the asphalt composition selected to provide a coating having a penetration value less than about 20 dmm and a softening point greater than about 140° F. (60° C.) when applied to the substrate pavement layer and cured;*

applying the emulsified composition which includes the first phase of asphalt composition, and the second phase of water, emulsifier and stabilizer to an exposed surface of the substrate pavement layer at a rate sufficient to provide an exposed coating on the exposed substrate surface, the emulsified composition having an amount of the asphalt composition effective to bond the layer of asphalt pavement material to the substrate pavement layer;

heating the asphalt pavement material to provide a heated pavement material to a temperature sufficient to soften the coating an amount effective to form a bonding surface on the exposed coating; and

applying the heated asphalt pavement material to the exposed coating to form a pavement layer and to soften the exposed coating forming a bond between the pavement layer and the substrate pavement layer.

Id. at 14:6–35 (emphasis added). The emphasized portion of claim 1 identifies characteristics of a cured asphalt emulsion, which is substantively recited in all claims, and on which the dispute between the parties primarily

focuses. The '724 patent describes the particular asphalt emulsion used to make a “low-tracking” tack coat that reduces or avoids the problems associated with the tack coat adhering to the wheels of construction vehicles. *Id.* at 4:53–5:14. Such vehicle tracking “reduces the effectiveness of the tack coat by displacing a portion of the intended volume from the area awaiting a new pavement layer.” *Id.* at 2:14–16. Additionally, “[i]nsufficient adhesion between a new layer of pavement and an existing base course . . . can cause pavement separation and cracking during construction [and] subsequent failures and premature deterioration of the pavement structure.” *Id.* at 2:17–22.

The Specification describes two broad approaches for obtaining a “coating having a penetration value less than about 20 dmm and a softening point greater than about 140° F. (60° C.) when applied to the substrate pavement layer and cured.” The first method involves preparing an emulsion with a “hard pen” asphalt component having a pen value of “from about 5 dmm to 15 dmm pen, with a softening point between about 150° F. (66° C.) and about 160° F. (71° C.)” *Id.* at 7:60–62. The Specification describes asphalt emulsions incorporating asphalt compositions defined by “Performance Grade” values ranging from PG-91 (about 5 pen) to PG-82 (about 40 pen). *Id.* at 9:59–67. Beginning with these hard pen asphalts in the emulsion, the Specification describes resulting “tack coat properties” including pen values of 1–40 dmm and a minimum softening point of 140°F (60°C). *Id.* at 10:37–41. The Specification also describes two examples of “the emulsion of the invention using a 13 dmm pen asphalt,” but does not reveal the pen value or the softening point of the resulting cured tack coat. *Id.* at 12:38–13:65.

The second method is to use a softer asphalt in the emulsion “in the range of mid or soft pen asphalt” and add “polymeric, waxes, or other equivalent additives” to achieve the properties of the “final cured tack coat.” *Id.* at 8:49–57. The Specification states: “[e]xamples of such polymeric additives are EVA, SBS, SB, SBR, SBR latex, polychloroprene, isoprene, polybutadiene, acrylic and acrylic copolymers, and other equivalent additives that produce the hard pen characteristics of the final cured tack coat.” *Id.* at 8:57–61. The Specification does not describe examples of emulsions using mid or soft pen asphalt along with any one of the specific additives listed that are used to obtain the properties of the final tack coat.

II. THE PARTIES’ POST-INSTITUTION ARGUMENTS

In our Institution Decision, we concluded that the argument and evidence adduced by Petitioner demonstrated a reasonable likelihood that all challenged claims were unpatentable. Dec. 21. We must now determine whether Petitioner has established by a preponderance of the evidence that the challenged claims are unpatentable over the cited prior art. 35 U.S.C. § 316(e). In this connection, we previously instructed Patent Owner that “any arguments for patentability not raised in the [Patent Owner Response] will be deemed waived.” Paper 8, 3; *see also In re Nuvasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016) (holding that patent owner’s failure to proffer argument at trial as instructed in scheduling order constitutes waiver). Additionally, the Board’s Trial Practice Guide states that the Patent Owner Response “should identify all the involved claims that are believed to be patentable and state the basis for that belief.” Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

III. CLAIM INTERPRETATION

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also* *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Under that standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Only those terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

In our Decision on Institution, we determined that resolution of the disputed issues at that stage of the proceeding did not require an express interpretation of any claim term. *See* Dec. 6–7. Neither the Petition nor any brief filed after institution includes any proposed interpretation for any claim term. *See* Pet.; PO Resp.; Reply. Accordingly, we maintain our determination that no express construction of any claim term is necessary to resolve the dispute that the parties present in this proceeding.

IV. ALLEGED OBVIOUSNESS OF THE CLAIMS

A. LEGAL STANDARDS

The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), reaffirmed the framework for determining obviousness as set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). The *KSR* Court summarized the four factual inquiries set forth in *Graham* that we apply in

determining whether a claim is reasonably likely to be unpatentable as obvious under 35 U.S.C. § 103(a) as follows:

1. determining the scope and content of the prior art,
2. ascertaining the differences between the prior art and the claims at issue,
3. resolving the level of ordinary skill in the pertinent art, and
4. considering objective evidence indicating obviousness or nonobviousness.

KSR, 550 U.S. at 406. With these standards in mind, we address Colas's challenge below.

B. LEVEL OF ORDINARY SKILL IN THE ART

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equipment Co., Inc. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner argues, with supporting testimony from its technical expert, Dr. Gayle King, that a person having ordinary skill in the technology described and claimed in the '724 patent would have "a bachelor's degree or the equivalent in the fields of chemistry, civil engineering, chemical engineering, material science, or an equivalent, as well as having 5 years of field experience or 5 years of additional academic research in the field of asphalt paving and/or asphalt emulsion technology." Pet. 13; Ex. 1010 ¶ 19.

Patent Owner responds that Petitioner’s proposed level of ordinary skill in the art is “extraordinarily high.” PO Resp. 1–2; *see also id.* at 14 (arguing that Dr. King “limits his definition of a PHOSITA to be someone with more than ordinary skill”). Despite this criticism, the definitions of ordinary skill in the art proposed by Patent Owner’s technical experts, Mr. William O’Leary and Dr. Dallas Little, call for a similarly high level of skill and experience. Mr. O’Leary testifies that a person of ordinary skill in the art has:

a bachelor of science degree or the equivalent in civil or chemical engineering, as well as having approximately 5 years of practical experience comprising some combination of asphalt binder testing and/or characterization, asphalt mixture testing and/or characterization, pavement design, and field experience such as quality control monitoring of the construction of pavement materials. Alternatively, a person having ordinary skill in the art may have 10 years of practical experience comprising some combination of asphalt binder testing and/or characterization, asphalt mixture testing and/or characterization, pavement design, and field experience instead of a four year college degree.

Ex. 2027 ¶ 48. Dr. Little’s definition is very similar. Ex. 2026 ¶ 27. At the hearing, Patent Owner confirmed that Mr. O’Leary’s statement represents Patent Owner’s definition of the level of ordinary skill in the art. *See* Tr. 48:10–22.

The Parties’ definitions differ in that under Patent Owner’s proposal, additional work experience can substitute for a science or engineering degree. Patent Owner supports that position by pointing to the backgrounds of Mr. O’Leary and the inventor, Mr. Blacklidge, neither of whom has a bachelor’s degree in engineering or science. PO Resp. 15–16; Ex. 1034, 12:15–13:3; Ex. 2027, App’x A; *see also* Ex. 2026 ¶¶ 22–23 (discussing the educational background of active workers in the field). Patent Owner also

cites Dr. King's deposition testimony agreeing that Mr. O'Leary was an example of someone who had attained the level of ordinary skill in the art through sufficient work experience without academic credentials beyond high school. Ex. 2025, 376:4–377:14. This evidence supports Patent Owner's position that relevant work experience can substitute for a bachelor's degree in science or engineering in this case.

Accordingly, we find that a person of ordinary skill in the art at the time of the invention of the '724 patent would have had a bachelor's degree in chemistry, civil engineering, chemical engineering, material science, or a related field of science or engineering, plus five years of experience in the field of asphalt paving and/or asphalt emulsion technology. Alternatively, an ordinarily skilled artisan would have had ten years of experience in the field of asphalt paving and/or asphalt emulsion technology.

C. SUMMARY OF THE CITED PRIOR ART

1. *AEMA*

AEMA is a technical manual jointly published by the Asphalt Institute and the Asphalt Emulsion Manufacturers Association. Ex. 1002, iii. The purpose of *AEMA* is “to impart a basic understanding of asphalt emulsions to those who work with the product” and “to be useful in choosing the emulsion that best fits a project's specific conditions.” *Id.*

2. *Bardesi*

Bardesi is entitled “A Novel Generation of Tack Coat Emulsions to Avoid Adhesion to Tyres.” Ex. 1003, 1. According to *Bardesi*, a limitation of traditional tack coats is that the residue of the emulsions commonly sticks to truck tires (or “tyres”), which diminishes the effectiveness of the tack coats. *Id.* *Bardesi* seeks to solve this problem, and discloses that “[t]he best

results have been obtained with hard residue emulsions, manufactured with special emulsifiers.” *Id.*

Bardesi describes testing of six different emulsions, which were “manufactured using 10/20, 60/70 and 150/200 pen bitumen, both conventional and obtained in special refining conditions.” *Id.* After summarizing how specimens performed in tests of bonding between bituminous courses, Bardesi concludes that the results “advise against the use of conventional 10/20 pen bitumen and make recommendable for this type of emulsions the use of 10/20 pen bitumen obtained in special refining conditions.” *Id.* at 3. Bardesi also describes tire adhesion testing of the specimens, the results of which “show that for the production of this type of emulsions the bitumen used must be 10/20 pen bitumen and they must be obtained in special refining conditions. If not, there is a very high risk of adhesion to the tyres of the machinery during the works.” *Id.*

3. *Christensen, Durand, and The Asphalt Handbook*

Petitioner relies on Christensen, Durand, and The Asphalt Handbook as “supplemental” references. Pet. 14. Christensen describes disadvantages of conventional tack coating processes that leave a sticky film and require a waiting period for drying. Ex. 1005, 1:18–21. Christensen seeks to provide a process for tack coating that eliminates those disadvantages, provides adhesive effect immediately, and improves adhesion. *Id.* at 1:22–26. In Christensen’s process, “asphalt compound is laid out immediately after the existing asphalt concrete layer has been cleaned and tack coated, and . . . the tack coat is dried and broken by the applied fresh and hot asphalt compound.” *Id.* at 2:1–5.

Durand aims to address problems such as unfavorably long “breaking duration” and tracking in known methods of tack coating. Ex. 1004, 2:6–11. Durand describes applying a surface-active agent on the support, which “leads to significant improvement of the adherence of the bonding layer on the support.” *Id.* at 3:28–30. Durand describes a tack coat that does not exhibit “tracking” and is made using asphalts having a variety of pen ratings, including one asphalt with a pen rating as low as 25. *Id.* at 3:52–67.

The Asphalt Handbook is a reference manual published by the Asphalt Institute. Ex. 1008, vii. It contains over 600 pages and purports to be “the definitive informational source on asphalt technology.” *Id.*

D. DIFFERENCES BETWEEN THE CITED PRIOR ART AND THE CLAIMED SUBJECT MATTER

1. *Claim 1*

a) Summary of Arguments in the Petition

Petitioner argues that “*AEMA* expressly or inherently discloses everything in claim 1 except particular characteristics of the tack coat emulsion.” Pet. 19. Specifically, Petitioner relies on *AEMA* as disclosing every limitation of claim 1 except for the requirement that “the asphalt composition in the emulsion [is] effective for providing a coating having a penetration value less than about 20 dmm, and a softening point greater than about 140 ° F. (60 ° C.) when applied to the substrate layer and cured.” *See id.* at 24–28. Petitioner relies on *Bardesi* as teaching an asphalt-containing emulsion that meets these characteristics. *Id.* at 20. Asphalt Handbook and Christensen play a backup role in Petitioner’s challenge, as Petitioner contends that they describe “conventional and well-known aspects of asphaltting technology . . . that may not be expressly discussed in *Bardesi* or *AEMA*, such as heating the asphalt paving material prior to overlay onto the

tack-coated substrate.” *Id.* Patent Owner does not challenge Petitioner’s assertions regarding how AEMA discloses the subject matter of claim 1 other than the limitations on the penetration value and softening point of the cured tack coat. *See id.* at 20–22; PO Resp. *passim*; Tr. 50:16–23. Thus, the dispute focuses on the limitations reciting the penetration value and softening point of the cured tack coat.

Petitioner relies upon Bardesi, as explicated in the testimony of Dr. King, as disclosing the use of an asphalt composition in the emulsified tack coat that has the claimed pen value of “less than about 20 dmm” and softening point of “greater than about 140 °F.” Pet. 22–24 (citing Ex. 1003, 1; Ex. 1010 ¶¶ 40, 42, 43, 46). Regarding pen value, Petitioner asserts that “*Bardesi* teaches emulsions ‘manufactured using 10/20 . . . pen bitumen,’ corresponding to a penetration of between 10 to 20 dmm.” *Id.* at 22 (quoting Ex. 1003, 1). Dr. King testifies that “*Bardesi* specifically taught the formulation of tack coat emulsions that meet” the claimed pen value of less than about 20 dmm because Bardesi’s emulsions are manufactured using bitumen having a pen value from 10 to 20 dmm. Ex. 1010 ¶ 39.

Regarding softening point, Petitioner relies on Dr. King’s testimony that “it is my opinion that asphalt having a hardness of 20-pen or below, such as the ones specifically taught in *Bardesi*, will necessarily have a softening point greater than about 140°F (60°C).” Ex. 1010 ¶ 40 (cited at Pet. 22). To reach this opinion, Dr. King “consulted Pfeiffer on the relationship between asphalt penetration and softening point.” *Id.* (citing Ex. 1006). Pfeiffer is an article from 1936 that presents an equation relating pen values to softening point. *See* Ex. 1006. Dr. King testifies that “this equation became an industry standard soon after publication and remains in

use today.” Ex. 1010 ¶ 40. In his declaration, Dr. King applies the following “more common rearranged form of Pfeiffer’s equation,” which relates penetration value, softening point, and “PI” or penetration index:

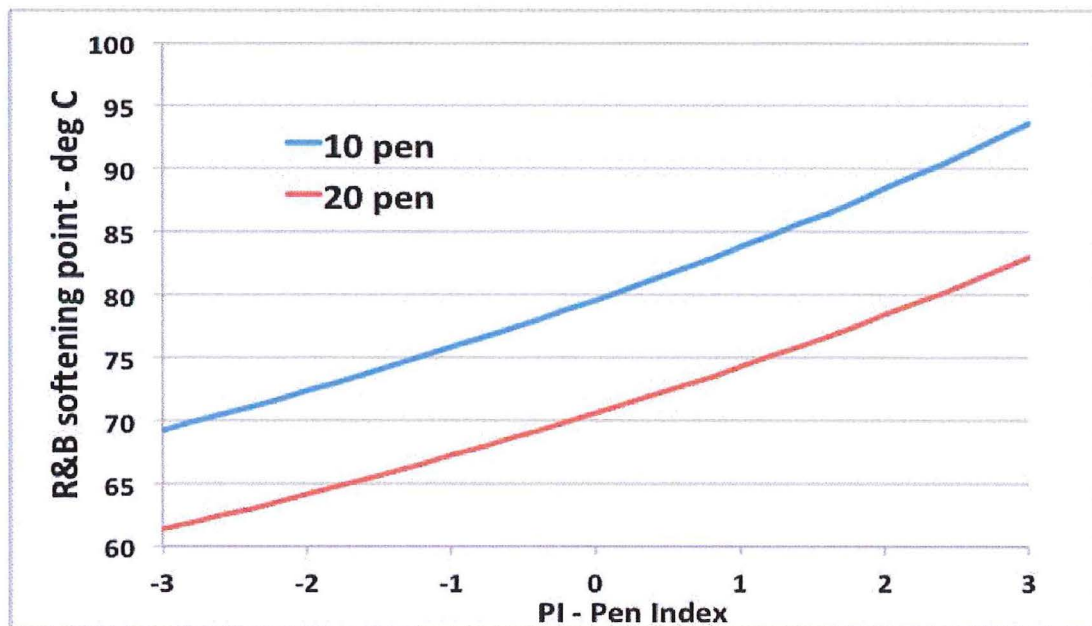
$$PI = (1952 - 500 \log pen - 20 SP) / (50 \log pen - SP - 120)$$

Id. Dr. King explains that PI is a measure of the quality or temperature susceptibility of an asphalt. *Id.* According to Dr. King,

[p]aving grade asphalts—regardless of whether they originated during Pfeiffer’s era, at the time of the [’]724 patent, or today—have a PI within the range of -1 to +1. . . . One of ordinary skill in the art would understand a reference to otherwise uncharacterized asphalt material, such as used in Bardesi, were N-type, with an index between -1 and +1.

Id. ¶ 41.

Using the equation reproduced above, Dr. King plotted softening point versus PI for asphalts having a penetration value of 10 dmm and 20 dmm:



Dr. King’s graph above plots the softening points for asphalts having pen values of 10 and 20 dmm as pen index varies from -3 to +3.

Id. ¶ 42.

From this plot, Dr. King notes that

[d]epending on the PI of the asphalt composition, even within the extreme range of -3 to +3, any 10-pen paving-grade asphalt would be expected to have an R&B Softening Point in the range [from] 69 to 94 degrees C. That is, across the entire quality range for paving-grade bitumen, a 10-pen asphalt has a softening point higher than the claimed minimum[] of 60°C. . . .

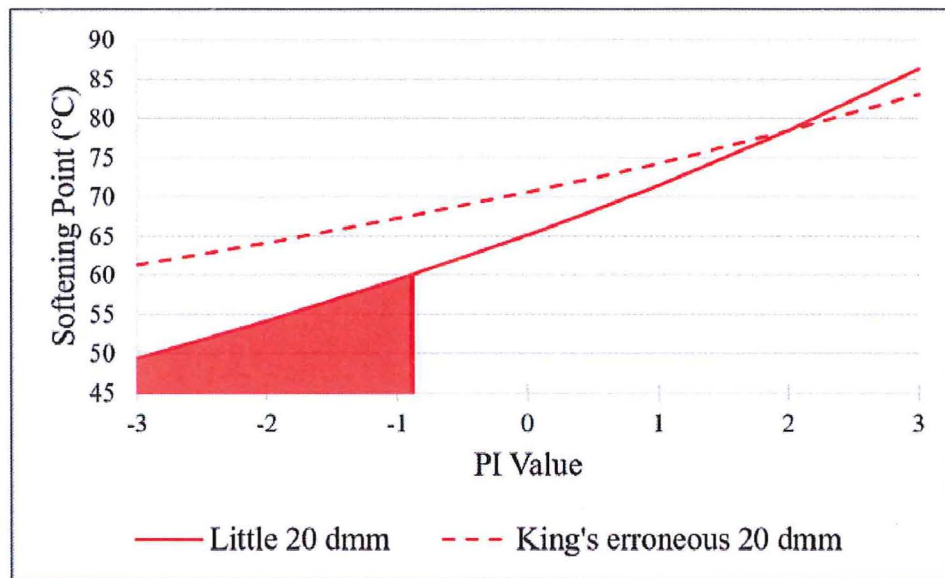
Id. Further, “even the 20-pen bitumen would have a softening point above 66°C so long as the PI remains within or above Pfeiffer’s normal bitumen range of -1 to +1, the expected range for paving asphalt.” *Id.* Because “a straight-run conventional 10-pen asphalt would always have an R&B Softening Point above the minimum 60°C specified by the [’]724 patent,” it is Dr. King’s “opinion that asphalts of 10-20 dmm penetration from the Bardesi tack coat emulsion would necessarily have softening points meeting the claim 1 requirement of ‘greater than about 60°C.’” *Id.* ¶ 43. Based on this analysis from Dr. King, Petitioner contends that “an asphalt having a penetration value less than about 20 dmm necessarily and inherently has a softening point greater than about 140°F (60°C).” Pet. 41, 49.

b) Summary of Patent Owner’s Rebuttal Arguments

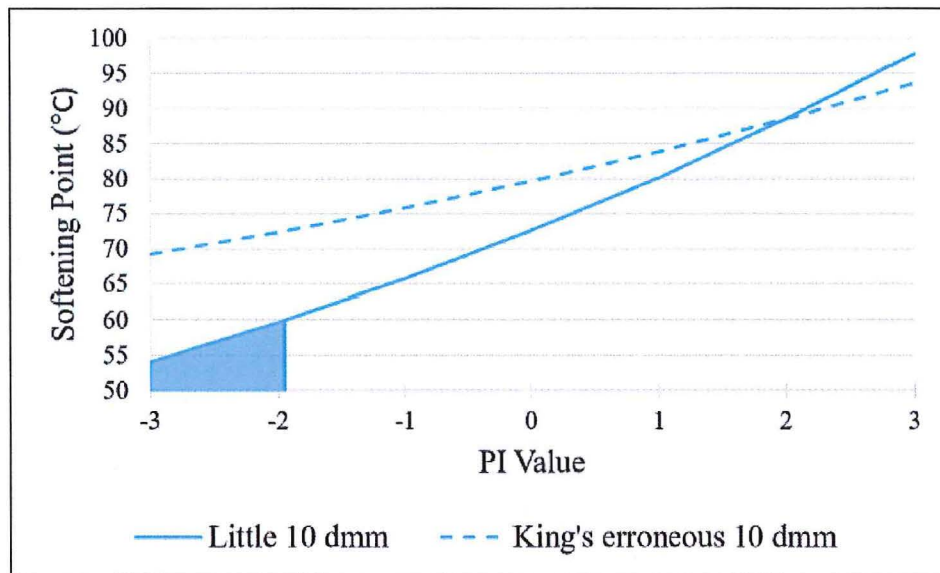
Patent Owner’s rebuttal takes issue with several aspects of Petitioner’s challenge. Patent Owner argues that Petitioner does not address the rheological properties of a tack coat *after curing*, which can differ significantly from the properties of a base asphalt before emulsification. *See* PO Resp. 17–24. Patent Owner also attacks Petitioner’s assertion that Bardesi discloses a cured coating having a softening point in the claimed range. *Id.* at 25–47. Further, Patent Owner contests the adequacy of Petitioner’s stated reason to combine the references. *Id.* at 50–55. Our

analysis in Part IV.D.1.d) below focuses on the softening point limitation, which is dispositive. Accordingly, our summary in this section will likewise focus on Patent Owner's arguments regarding softening point.

Patent Owner argues that Dr. King incorrectly applied the Pfeiffer equation, and that when the equation is correctly applied, the results show a softening point outside of the claimed range for asphalts with 10 dmm and 20 dmm penetration values. PO Resp. 29–37. Patent Owner's expert, Dr. Little, applied the same version of the Pfeiffer equation as Dr. King and arrived at different softening points for 10-pen and 20-pen bitumen. *See* Ex. 2026 ¶¶ 90–93. The graphs reproduced below show the softening points Dr. Little obtained for 20-pen and 10-pen asphalts as compared to the softening points Dr. King calculated for those same asphalts:



This graph compares softening points calculated by Dr. Little (solid line) to those calculated by Dr. King (dashed line) for 20-pen asphalts.



This graph compares softening points calculated by Dr. Little (solid line) to those calculated by Dr. King (dashed line) for 10-pen asphalts.

PO Resp. 30, 32.

In the graphs above, the shaded areas beneath the solid line signify asphalts with softening points less than 60°C. *Id.* Thus, according to Dr. Little’s calculations using the Pfeiffer equation, 20-pen asphalts having a PI of -0.883 or less have a softening point less than 60°C. *Id.* at 29; Ex. 2026 ¶ 93. According to Patent Owner, these revised calculations show that “*Bardesi* 10/20 asphalts simply do not necessarily have the claimed softening points.” PO Resp. 34. Patent Owner also highlights the deposition testimony of Dr. King in which he was asked about the revised softening point calculations and stated: “That doesn’t change the final conclusion because it was so far above before that even with this, it’s still above. It’s with less absolute certainty but with extremely high probability.” Ex. 2025, 368:20–23. In Patent Owner’s view, this testimony shows that Dr. King “expressly acknowledged that a softening point greater than 60°C

is merely a probability.” PO Resp. 36. Patent Owner argues that Dr. King’s “recognition that some of *Bardesi*’s asphalts may have softening points below 60°C defeats any inherency argument.” *Id.* (citing *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991)).

Patent Owner also challenges Dr. King’s assumption that *Bardesi*’s 10/20-pen asphalt would be a “paving grade” asphalt having a PI value between -1 and +1. PO Resp. 27–29. Patent Owner cites evidence that paving grade asphalts are typically used as binder materials in a paving layer and have pen values above 40 dmm. *Id.* at 27; Ex. 2026 ¶¶ 38–39; Ex. 1008, 159. Because *Bardesi*’s 10/20-pen asphalt is used in an emulsion for a tack coat rather than as a binder, Patent Owner contends, based on the testimony of Dr. Little, that an ordinarily skilled artisan would not have assumed it to have the attributes of a typical paving grade asphalt. PO Resp. 27; Ex. 2026 ¶ 42. In addition, Patent Owner attacks the reliability of the Pfeiffer equation, quoting an academic journal article describing it as “unrealistic and seriously misleading” and arguing that it has been superseded by other methods. PO Resp. 34–35 (quoting Ex. 2005, 275); *see also* Ex. 2026 ¶¶ 83–85 (testimony of Dr. Little opining that “a *PHOSITA* would not have understood *Pfeiffer* to be an ‘industry standard’ as Dr. King asserts” and discussing academic literature describing shortcomings of the Pfeiffer equation).

According to Patent Owner, *Bardesi* simply does not provide enough information about its 10/20 pen bitumen “obtained in special refining conditions” (Ex. 1003, 3) to permit a reliable assessment of its softening point. PO Resp. 41–44. On this issue, Patent Owner highlights Dr. King’s response, when asked during his deposition whether his declaration

addressed Bardesi's teaching that the 10/20 pen bitumen used must be obtained in special refining conditions: "No, because I'm not sure I agree with Bardesi on that point. . . . [A]lthough he had to do so because of his crude sources, I think there were other options I would have used."

Ex. 2025, 140:8–20 (cited at PO Resp. 43).

c) Summary of Petitioner's Reply Arguments

In Reply, Petitioner argues that the '724 patent's "only alleged point of novelty is claiming softening points above 60°C" but that Petitioner's evidence "shows that this claimed softening point above 60°C is inherent and 'typical' for many 10/20 pen asphalts disclosed in *Bardesi*." Reply 1. Petitioner minimizes the significance of the softening point limitation by arguing that "nowhere in the '724 patent Specification or intrinsic record is there any discussion whatsoever of the importance of the claimed softening point and the desired result." *Id.* at 5. Petitioner points out that the Background of the '724 patent states that "typically, hard pen . . . asphalt compositions have pen values of about 40 dmm or less, with softening points greater than about 140° F. (60° C.)," and that Patent Owner's experts agree with that statement. *Id.* at 5–6 (citing Ex. 1001, 2:64–67; Ex. 1032, 146:16–147:10; Ex. 1031, 60:23–61:6).

Petitioner defends its reliance on the Pfeiffer equation, noting Dr. King's testimony that it is "the best tool we have available even today to characterize between" penetration value and softening point. Reply 16 (quoting Ex. 2025, 215:17–22). Petitioner points out that Dr. Little has used the Pfeiffer equation in his own research to calculate PI values for asphalts. *Id.* (citing Ex. 1031, 116:17–117:2).

Petitioner concedes that “Dr. King made [a] mathematical mistake with his Pfeiffer calculations” and that Dr. Little’s calculations accurately apply Pfeiffer for 10-pen and 20-pen asphalts with PI values between -3 and +3. Reply 17. Petitioner further agrees that the corrected data from Dr. Little:

shows that *not all* of the 10/20 pen asphalts having a Penetration Index between -3 and +3 will have softening points above 60° C. But the corrected Pfeiffer relationship still shows that *most* 10/20 pen asphalts, and certainly the better quality 10/20 pen asphalts, will have the claimed softening point values above 60° C.

Id. at 18. Petitioner argues that “a *prima facie* case of obviousness still exists when the ranges of a claimed composition overlap the ranges disclosed in prior art.” *Id.* at 19 (citing *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003)).

d) Analysis

After considering all the arguments and evidence, including those summarized above, we agree with Patent Owner that the evidence does not sufficiently support the theory advanced in the Petition as to why the cited combination teaches or renders obvious the softening point limitation. As summarized above, the obviousness challenge in the Petition was predicated on the inherency of the softening point limitation in the asphalt of the emulsion disclosed in Bardesi. The Petition argued, consistently and exclusively, that a softening point within the claimed range was necessarily and inherently present in Bardesi’s 10/20 pen asphalt. *See* Pet. 22 (“an asphalt having a hardness of 20-pen or below, such as the ones specifically taught by Bardesi, will *necessarily* have a softening point greater than about 140°F (60°C)”) (emphasis added); *id.* at 24 (“asphalts of 10–20 dmm penetration from the Bardesi tack coat emulsion would *necessarily* have

softening points meeting the claim 1 requirement of ‘greater than about 60°C.’”) (emphasis added); *id.* at 26 (same); *id.* at 38 (“The ‘10/20 pen asphalts of Bardesi *necessarily* have softening points greater than about 140°F”) (emphasis added); *id.* at 41 (“an asphalt having a penetration value less than about 40 dmm *necessarily and inherently* has a softening point greater than about 140°F (60°C)”) (emphasis added); *id.* at 48 (same).

The Federal Circuit has explained that the concept of inherency in the patentability analysis was originally rooted in anticipation and “must be limited when applied to obviousness.” *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1195 (Fed. Cir. 2014); *see also Honeywell Int’l Inc. v. Mexichem Amanco Holding S.A. de C.V.*, 865 F.3d 1348, 1354–55 (Fed. Cir. 2017) (cautioning that “the use of inherency in the context of obviousness must be carefully circumscribed”). The Federal Circuit has further explained that:

A party must . . . meet a high standard in order to rely on inherency to establish the existence of a claim limitation in the prior art in an obviousness analysis—the limitation at issue necessarily must be present, or the natural result of the combination of elements explicitly disclosed by the prior art.

PAR Pharm., 773 F.3d at 1195–96. Under this standard, “[i]nherency . . . may not be established by probabilities or possibilities.” *Id.* at 1195 (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981)). “The mere fact that a certain thing may result from a given set of circumstances is not sufficient to render the result inherent.” *Millennium Pharms., Inc. v. Sandoz Inc.*, 862 F.3d 1356, 1367 (Fed. Cir. 2017) (quoting *Oelrich*, 666 F.2d at 581).

Applying that standard for inherency, the evidence does not sufficiently support a finding that a cured tack coat formed from a base asphalt as described in Bardesi would necessarily have “a softening point

greater than about 140 ° F. (60 ° C.),” as recited in claim 1. The parties agree that Dr. King’s calculations using the Pfeiffer equation were erroneous and that Dr. Little’s calculations correctly apply the Pfeiffer equation. *See* PO Resp. 29; Reply 17; Tr. 27:7–28:10, 80:9–10. Even assuming the correctness of the assumptions undergirding Dr. King’s analysis of the softening point limitation — which include the reliability of the Pfeiffer equation to calculate softening point, the range of PI values between -1 and +1 for the asphalts described in Bardesi, and the use of a base asphalt’s softening point as a measure of the softening point for a cured tack coat made from that asphalt — the now agreed-upon data that result from the Pfeiffer equation show that not all 10-pen and 20-pen asphalts have a softening point greater than 60°C. Ex. 2026 ¶¶ 91–93. Indeed, Petitioner and Dr. King seem to concede this point. Reply 18; Tr. 80:8–14; *see also* Ex. 1030 ¶ 29 (rebuttal declaration of Dr. King stating that “most 10-20 pen paving grade asphalts” would have a softening point in the claimed range).

We recognize that Dr. Little’s data reflect that only a small fraction of asphalts are outside the claimed range of softening points for PI values between -1 to +1. In particular, for a 20-pen asphalt, softening point is lower than 60°C when the PI value is less than -0.883. Ex. 2026, 156. However, the fraction of 10-pen and 20-pen asphalts that are outside the claimed range of softening points expands when one looks beyond the range of PI values of -1 to +1 that Dr. King assumed in his initial analysis. *See* Ex. 1010 ¶ 41.

In considering Petitioner’s case for the inherency of the softening point limitation, the evidentiary record does not support that the PI value of Bardesi’s 10/20 bitumen would necessarily have been between -1 and +1. As Petitioner agrees, Bardesi itself is silent regarding penetration index. *See*

Ex. 1003; Tr. 29:19–21 (Petitioner’s counsel agreeing that Bardesi does not discuss pen index). Petitioner relies on Dr. King’s testimony to establish that Bardesi’s PI value would have been between -1 and +1. *See* Pet. 23–24; Ex. 1010 ¶ 41; *see also* Tr. 24:3–10. When asked during his deposition what PI values paving grade asphalts typically have, Dr. King explained as follows:

Typically, most of them fall between minus 1 and plus 1. . . . But the range is set from minus 3 to plus 3. . . . The low ones are really waxy that we prefer not to use but a few people have to. The high end is what we really strive to find because that’s the good stuff.

Ex. 2025, 232:6–16. Later in the deposition, in response to a question of what an asphaltic bitumen is, Dr. King elaborated:

A. There are two types, and that’s where the penetration index comes in again. And the — the real range is minus 3 to plus 3 but, in reality, minus 1 to plus 1 is kind of the average typical bitumens we see for most crudes.

Those that are waxy have a different curve shape, and they tend to fall in the minus 3 to minus 1 category, and then there are the materials that are higher in asphaltenes, the things we really want to have, that are plus 1 to plus 3, and those are blown bitumens and certain types of modified materials. So, it’s the highest quality Venezuelan and Canadian asphalts. So, they’re materials of extraordinarily high quality in temperature susceptibility.

Q. And for paving grade asphalt, is it possible to use, in certain circumstances, any of the from minus 3 to plus 3?

A. Yes, but we would try very hard, as refiners, to isolate the minus 3s and not -- we try to divert that stream to something else other than paving.

Id. at 265:8–266:2.

Thus, Dr. King's testimony indicates that a PI value between -1 and +1 is a preference and an average of what is typical, but that asphalts in the broader range of -3 to +3 can be used. That Dr. King chose to plot expected softening points for a range of PI values from -3 to +3 is an additional indication that he views -1 to +1 as the typical or preferred range of PI values for Bardesi's 10/20 pen asphalt, but that the PI value is not necessarily limited to that -1 to +1 range. Ex. 1010 ¶ 42. At the hearing, Petitioner's only explanation as to why Dr. King plotted a range of PI values from -3 to +3 was to speculate that "[p]erhaps he wanted to show the whole range beyond that expected range." *See* Tr. 24:10–21.

Dr. Little's deposition testimony also indicates that PI values are not necessarily limited to the range of -1 to +1. When asked, what are the most common grades of penetration index he had seen in his experience, he responded "[m]aybe from .5 to negative 1.5, somewhere in that range, most common, but not all." Ex. 1031, 117:11–15. As can be seen from the plots reproduced above from the Patent Owner Response, a PI value range of -1 to +1 already includes some 20 pen asphalts that are outside of claimed range of softening points. *See* PO Resp. 30, 32. Applying a PI value range of -3 to +3 sweeps in more asphalts, both 10 pen and 20 pen, which would have softening points outside the claimed range. *Id.*

Petitioner's arguments in Reply that the "claimed softening point above 60°C is inherent and 'typical' for many 10/20 pen asphalts disclosed in *Bardesi*" (Reply 1), that the claimed softening point "is the typical and expected value when a hard pen asphalt composition is used" (*id.* at 6), and that "the corrected Pfeiffer relationship still shows that *most* 10/20 pen asphalts . . . will have the claimed softening point values" (*id.* at 18) do not

support the inherency of the claimed softening point. Indeed, those probabilistic arguments only underscore that the softening point limitation is not necessarily present in Bardesi. *See PAR Pharm.*, 773 F.3d at 1195 (“Inherency . . . may not be established by probabilities or possibilities.”). These arguments morph the inherency analysis from requiring that a feature is necessarily present to one in which the feature need only be more likely than not present. *See* Tr. 28:20–29:2 (Petitioner responding to a question whether “typical” PI values are sufficient for inherency by arguing, “[w]e think that we have to show that it’s the preponderance of the evidence that the asphalts used by Bardesi would be within the claimed parameters.”)

At the hearing, Petitioner suggested that it was abandoning the inherency theory for the softening point limitation, stating that “we are not relying upon inherency with respect to all asphalts will necessarily have that claimed softening point.” *See* Tr. 80:8–14. The problem for Petitioner, however, is that inherency was the only theory presented in the Petition for why the cited combination teaches or renders obvious the softening point limitation. We have already reviewed above the numerous portions of the Petition in which Petitioner relied on inherency for the softening point limitation. *See* Pet. 22, 24, 26, 38, 41, 48.⁶ Petitioner argued at the hearing that inherency “wasn’t an all-or-nothing proposition”—i.e., that its Petition

⁶ Even in the Reply, Petitioner continued to refer to the softening point limitation as being inherently and necessarily present. *See* Reply 1 (“The [’]724 patent is invalid because Petitioner shows that this claimed softening point above 60°C is *inherent* and ‘typical’ for many 10/20 pen asphalts disclosed in Bardesi.”) (emphasis added); *id.* at 3 (“any 10-20 pen specification paving grade bitumen purchased in Britain at the time of Bardesi’s publication would have *necessarily* had a softening point well above 60°C”) (emphasis added).

did not rely only on inherency for the softening point limitation. *See* Tr. 79:4–80:14. Petitioner pointed to its reliance on Dr. King’s experience, Dr. King’s use of the Pfeiffer equation, and the assumptions Dr. King used in applying the Pfeiffer equation. *Id.* Yet those are all facts that Petitioner relied on to show why the softening point limitation was inherently and necessarily present in Bardesi, not reasons why the softening point limitation would have been obvious separately or independently from inherency.

To the extent Petitioner’s arguments in the Reply and at the hearing that the claimed range of softening points is typical or expected are offered as an alternative theory of obviousness in lieu of inherency, those arguments were not adequately developed and presented in the Petition. “It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’” *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (quoting 35 U.S.C. § 312(a)(3)). “Unlike district court litigation—where parties have greater freedom to revise and develop their arguments over time and in response to newly discovered material—the expedited nature of IPRs bring with it an obligation for petitioners to make their case in their petition to institute.” *Id.*

The Federal Circuit has applied this rule to bar a petitioner from shifting its theory of obviousness after the patent owner pointed out the flaws of the obviousness case presented in the petition. *See Wasica Finance GmbH v. Continental Automotive Sys., Inc.*, 853 F.3d 1272, 1286 (Fed. Cir. 2017) (“Rather than explaining how its original petition was correct, Continental’s subsequent arguments amount to an entirely new theory of

prima facie obviousness absent from the petition. Shifting arguments in this fashion is foreclosed by statute, our precedent, and Board guidelines.”).

Likewise, the Petition in this case relied on inherency for the softening point limitation, and Patent Owner successfully rebutted that theory in its Patent Owner Response. Following that rebuttal, Petitioner is not permitted to abandon inherency to pursue a different theory that it did not present in its Petition. Accordingly, we do not reach the issue of whether the claim is obvious under a different theory than Petitioner advanced in its Petition.

Finally, we find unpersuasive Petitioner’s argument that it has presented a prima facie case of obviousness due to the overlap in the claimed range of softening points with that of the prior art. Reply 19 (citing *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003)). *Peterson* states that “[a] prima facie case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art.”

Peterson, 315 F.3d at 1329. Leaving aside the dubious transferability of this principle from the examination context to the *inter partes* review setting, this proposition is unhelpful to Petitioner’s case on the merits because Bardesi does not disclose a range of softening points at all. The Parties’ experts have calculated a potential range of softening points from the penetration value disclosed in Bardesi by assuming a certain range of PI values. Because Bardesi itself discloses neither softening point ranges nor PI value ranges, Petitioner’s overlapping range argument is unpersuasive.

For these reasons, we determine that Petitioner did not carry its burden to demonstrate that claim 1 would have been obvious in view of the cited references.

2. *Claims 2–12, 15–20, 23–28, and 31–33*

Independent claims 15, 23, and 31 include substantially the same softening point limitation as in claim 1. *See* Ex. 1001, 15:34–37, 16:39–40, 17:21–22. Petitioner’s evidence and arguments, and Patent Owner’s rebuttal, regarding the softening point limitation in those claims are the same as for claim 1. *See* Pet. 38, 48, 55; PO Resp. 25–47; Reply 4–6, 17–20. Thus, for the reasons discussed in Part IV.D.1 above, Petitioner has not established by a preponderance of the evidence that claims 14 and 25 would have been obvious in view of the cited combination. By virtue of their dependency, claims 2–12, 16–20, 24–28, 32, and 33 incorporate the softening point limitation recited in one of independent claims 1, 15, 23, and 31. Thus, Petitioner also has not demonstrated the unpatentability of any of those claims. *See In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.”).

E. SECONDARY CONSIDERATIONS OF NONOBVIOUSNESS

Because our evaluation of the first three *Graham* factors leads us to determine that Petitioner has not demonstrated that the challenged claims would have been obviousness in view of the cited art, we need not determine whether Patent Owner’s evidence of secondary considerations further weighs against a conclusion of obviousness.

The Federal Circuit has repeatedly emphasized that secondary considerations must be considered en route to a determination of obviousness. *See Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1335 (Fed. Cir. 2016); *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012); *Ruiz v. A.B. Chance Co.*,

234 F.3d 654, 663 (Fed. Cir. 2000). However, we are unaware of authority requiring evaluation of secondary considerations en route to a determination of *non*obviousness. Indeed, the Federal Circuit has found it unnecessary to consider arguments relating to objective indicia of nonobviousness when the patent challenger failed to establish obviousness. *See Otsuka Pharmaceutical Co. v. Sandoz, Inc.*, 678 F.3d 1280, 1296 (Fed. Cir. 2012) (“Because we agree with the district court that the Defendants failed to prove that claim 12 of the ’528 patent would have been prima facie obvious over the asserted prior art compounds, we need not address the court’s findings regarding objective evidence of nonobviousness.”); *ProBatter Sports, LLC v. Sports Tutor, Inc.*, 680 F. App’x 972, 976 (Fed. Cir. 2017) (“Because we conclude that Sports Tutor failed to establish obviousness by clear and convincing evidence even without considering ProBatter’s contrary evidence, we need not address ProBatter’s evidence of objective indicia of nonobviousness.”).

This approach makes sense, given that secondary considerations are a bulwark against improper hindsight bias in the obviousness analysis. *See, e.g., Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1378 (Fed. Cir. 2012) (“These objective criteria help inoculate the obviousness analysis against hindsight.”); *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litigation*, 676 F.3d 1063, 1079 (Fed. Cir. 2012) (“The objective considerations, when considered with the balance of the obviousness evidence in the record, guard as a check against hindsight bias.”). Consistent with that role, secondary considerations can serve to disprove or rebut obviousness. *See Transocean*, 699 F.3d at 1349 (“A party is also free to introduce evidence relevant to the fourth *Graham* factor,

objective evidence of nonobviousness, which may be sufficient to disprove or rebut a prima facie case of obviousness.”); *WMS Gaming, Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999) (“The objective evidence of non-obviousness may be used to rebut a prima facie case of obviousness based on prior art references.”). Such rebuttal is unnecessary when the evidence under the first three *Graham* factors does not show obviousness.

When the first three *Graham* factors do not show obviousness, evaluation of secondary considerations is superfluous because the secondary considerations will not affect the outcome. In the scenario where a patent challenger has not presented sufficient evidence of obviousness under the first three *Graham* factors, a determination that the secondary considerations do not tend to show nonobviousness would still yield an ultimate determination that obviousness had not been shown. In the same scenario, the same ultimate determination that obviousness had not been proved would flow from a determination that the secondary considerations do tend to show nonobviousness.

We also note that the Board has previously declined to weigh secondary considerations when evaluation of the first three *Graham* factors led to a determination that obviousness had not been proven. *See, e.g., Purdue Pharma L.P. v. Depomed, Inc.*, Case IPR2014-00377, 2015 WL 4150832, at *21 (PTAB July 8, 2015) (“In light of our determination that Petitioner has not shown by a preponderance of the evidence that any of the challenged claims are unpatentable as obvious, we need not reach the merits of Patent Owner’s evidence of secondary considerations of nonobviousness.”), *aff’d*, 643 F. App’x 960, 966 (Fed. Cir. 2016) (nonprecedential) (“[W]e conclude that the Board did not err in finding that

[the petitioner] failed to establish a reason to combine. . . . Because the Board did not reach the merits of [the patent owner]’s evidence of secondary considerations, we similarly decline to do so in the first instance on appeal.”).

Accordingly, we do not reach the merits of Patent Owner’s secondary considerations of nonobviousness.

F. CONCLUSIONS REGARDING PETITIONER’S OBVIOUSNESS CHALLENGE

Petitioner has not shown by a preponderance of the evidence that any of claims 1–12, 15–20, 23–28, and 31–33 would have been obvious based on the combination of AEMA and Bardesi in view of Christensen, Durand, and/or The Asphalt Handbook.

V. MOTIONS TO EXCLUDE EVIDENCE

A. PETITIONER’S MOTION TO EXCLUDE

Petitioner moves to exclude Exhibits 2033 and 2043, which are declarations of R. Grover Allen, an employee of Patent Owner. Paper 24, 1; Ex. 2033 ¶ 1.⁷ In Exhibit 2033, Dr. Allen describes the performance and results of testing on certain emulsions and base asphalts that was performed at a lab owned by Patent Owner. Ex. 2033 ¶¶ 2–21. In Exhibit 2043, Dr. Allen describes his own educational background and qualifications. Ex. 2043 ¶¶ 2–6. Patent Owner relies on these exhibits in support of its argument that base asphalts having pen values or softening points within the claimed range can result in tack coats after curing whose rheological properties are outside of the claimed ranges. PO Resp. 21–23. Petitioner

⁷ Petitioner’s Motion erroneously cites the Supplemental Declaration of R. Grover Allen as Exhibit 2037 rather than Exhibit 2043. Paper 24, 1.

argues that the declarations should be excluded because Dr. Allen does not have firsthand knowledge of the testing, because the description of the testing is hearsay, and because the declarations do not disclose sufficient information about the methodologies or results of the testing. Paper 24, 3–4, 6–11; Paper 35, 1–5. This Final Decision does not rely upon the content of either of Dr. Allen’s declarations. Therefore, we *dismiss as moot* Petitioner’s Motion to Exclude.

B. PATENT OWNER’S MOTION TO EXCLUDE

Patent Owner moves to exclude Exhibit 1022 and Attachments B–F to Exhibit 1030, the Rebuttal Declaration of Dr. King. Paper 27, 1. The documents at issue are product specifications, circulars, and technical papers, which Dr. King cites in his analysis of Patent Owner’s testing as described in Dr. Allen’s declaration and Patent Owner’s argument regarding secondary considerations. *See* Ex. 1030 ¶¶ 20, 33. Patent Owner moves to exclude these documents pursuant to Rule 901(a) of the Federal Rules of Evidence, arguing that they are not authenticated. Paper 27, 2–6; Paper 34, 1–3. This Final Decision does not rely upon any of the documents that are the subject of Patent Owner’s motion to exclude. Therefore, we *dismiss as moot* Patent Owner’s Motion to Exclude.

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–12, 15–20, 23–28, and 31–33 have not been shown to be unpatentable;

FURTHER ORDERED that Petitioner’s Motion to Exclude is *dismissed as moot*;

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

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

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UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

COLAS SOLUTIONS, INC.,)
)
 Appellant,) **NOTICE OF APPEAL**
)
 v.)
)
BLACKLIDGE EMULSIONS, INC.,)
)
 Appellee.)
)

Pursuant to 35 U.S.C. § 142 and 37 C.F.R. §§ 90.2(a) and 90.3(a)(1), Appellant, Colas Solutions, Inc. hereby appeals to the United States Court of Appeals for the Federal Circuit for review of the Final Written Decision (IPR 2016-01031) of the United States Patent and Trademark Office Patent Trial and Appeal Board (“PTAB”) entered on November 2, 2017. A copy of the Final Written Decision is attached. This appeal is being timely filed within sixty-three days of the Final Written Decision pursuant to 37 C.F.R. § 90.3(a)(1).

This Notice of Appeal is being filed with the Director of the United States Patent and Trademark Office. The docketing fee of \$500.00 and the Notice of Appeal are also being electronically filed with the Clerk of Court for the United States Court of Appeals for the Federal Circuit. *See* Fed. Cir. R. 15(a)(1).

Simultaneously, a copy of this Notice of Appeal is being filed with the United States Patent and Trademark Office Patent Trial and Appeal Board.

Date: December 28, 2017

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CERTIFICATE OF FILING AND SERVICE

I hereby certify that the original foregoing NOTICE OF APPEAL is being delivered via hand delivery this 28th day of December, 2017 to:

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel, Room 10B20
Madison Building East, 600 Dulany Street
Alexandria, Virginia 22313

I also hereby certify that a true and correct copy of the foregoing NOTICE OF APPEAL is being served via first class mail this 28th day of December, 2017, on counsel for Blacklidge Emulsions, Inc. as follows:

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I hereby certify that on this 28th day of December, 2017, I electronically filed the foregoing NOTICE OF APPEAL and docketing fee of \$500 with the Clerk of the United States Court of Appeals for the Federal Circuit by using the CM/ECF system.

Date: December 28, 2017

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