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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CATALENT PHARMA SOLUTIONS, INC.
Petitioner,

v.

PATHEON SOFTGELS INC.,
Patent Owner.

Case No. IPR2018-00421
Patent 9,693,978 B2

Before ERICA A. FRANKLIN, TINA E. HULSE, and JOHN E. SCHNEIDER, *Administrative Patent Judges*.

SCHNEIDER, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background

Catalent Pharma Solutions, Inc. ("Petitioner") filed a Petition requesting *inter partes* review of claims 1–38 of U.S. Patent No. 9,693,978 B2 (Ex. 1003, "the '978 patent"). Paper 2 ("Pet."). Patheon Softgels Inc. ("Patent Owner") filed a Preliminary Response contending that the Petition should be denied as to all the challenged claims. Paper 8 ("Prelim. Resp.").

We have authority under 37 C.F.R. § 42.4(a) and 35 U.S.C. § 314(a) to institute an *inter partes* review, which provides that an *inter partes* review may not be instituted unless the information presented in the Petition "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Having considered the arguments and the evidence presented, for the reasons described below, we determine that Petitioner has failed to demonstrate that there is a reasonable likelihood that it would prevail with respect to claims 1–38 challenged by the Petition. Accordingly, we decline to institute an *inter partes* review of claims 1–38 of the '978 patent.

B. Additional Proceedings

Petitioner represents that the '978 patent is at issue in *Patheon Softgels Inc. v. Apotex Inc. et al.*, No 3:17-cv-13819 (D.N.J.) and *Patheon Softgels Inc. v. Apotex Inc. et al.*, No. 1:18-cv-00003 (D. Del.). Petitioner also represents that a petition for *inter partes* review has been filed challenging related patent U.S. Patent No. 9,693,979 B2, which is now IPR2018-00422.

C. The '978 Patent (Ex. 1003)

The '978 patent, titled "SOLVENT SYSTEM FOR ENHANCING THE SOLUBILITY OF PHARMACEUTICAL AGENTS," purports to disclose oral pharmaceutical compositions comprising liquid dosage forms of sodium naproxen in soft gel capsules. Ex. 1003, (54), Abstract.

Softgel capsules using concentrated solutions are known in the art and often use polyethylene glycol as part of the solvent system. *Id.* at col. 1, ll. 58–65. Use of polyethylene glycol with certain pharmaceutical agents such as naproxen sodium, can lead to the formation of polyethylene glycol esters, which reduce the availability of the pharmaceutical agent. *Id.* at col. 2, ll. 25–30.

The specification of the '978 patent describes pharmaceutical compositions comprising the salt of one or more active agents such as naproxen and a de-ionizing agent. *Id.* at col. 2, ll. 41–44. The de-ionizing agent causes partial de-ionization of the salt of the active ingredient, which enhances bioavailability of the active agent and reduces the formation of polyethylene glycol esters. *Id.* at col. 2, ll. 45–49.

D. Illustrative Claim

Of the challenged claims, claims 1, 10, 18, 20, and 21 are independent. Claims 2–9 and 22–25 depend from claim 1; claims 11–17, 26, and 27 depend from claim 10; claims 19 and 28–30 depend from claim 18; claims 31–34 depend from claim 20; and claims 35–38 depend from claim 21. Claim 1 below is illustrative of the claimed subject matter and reads as follows:

> 1. A pharmaceutical composition comprising soft gelatin capsule comprising a fill material comprising:
> (a) a naproxen salt;

(b) about 5% lactic acid by weight of the fill material; and
(c) polyethylene glycol.

Ex. 1003, col. 9, ll. 63–67. The other independent clams, claims 10, 18, 20, and 21, are similar to claim 1 and include limitations regarding the amount of naproxen salt and polyethylene glycol that should be present and limitations calling for the presence of additional solubilizers. Ex. 1003, col. 10, ll. 30–32, 57–64, col. 11, ll. 1–17.

E. The Alleged Grounds of Unpatentability

Petitioner contends that the challenged claims of the '978 patent are unpatentable on the following grounds.[1]

References	Basis	Claims Challenged
Chen[2]	§ 102; § 103(a)	1–38
Kim[3]	§ 103(a)	1–38
Kim and Chen	§ 103(a)	1–38
Schoenhard[4]	§ 102; § 103(a)	1–38

[1] Petitioner supports its challenge with the Declaration of Peter Draper. Ex. 1001.
[2] Chen et al., US 6,383,471 B1; issued May 7, 2002 ("Chen") (Ex. 1009).
[3] Kim et al., US 2004/0157928 A1; published Aug. 12, 2004 ("Kim") (Ex. 1010).
[4] Schoenhard, US 2004/0224020 A1; published Nov. 11, 2004 ("Schoenhard") (Ex. 1011).

II. CLAIM CONSTRUCTION

A. Legal Standard

"A claim in an unexpired patent that will not expire before a final written decision is issued shall be given its broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b). . Under that standard, the claim terms are generally 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. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) ("The ordinary and customary meaning 'is the meaning that the term would have to a person of ordinary skill in the art in question.'" (Quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005))). Only terms that are in controversy need to be construed and only then to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Science & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

1. About 5%

Each of the claims includes the limitation that the composition comprise "about 5% lactic acid by weight of the fill material." *See, e.g.*, Ex. 1003, col. 9, l. 66.

Petitioner contends that the term "about 5% . . . by weight" should be interpreted as embracing the range of from 2 to 8%. Pet. 12–13. Petitioner argues that this range is supported by Examples 8–12 in the specification, which specify 0.24 to 0.35 mole equivalents of lactic acid per mole equivalent of sodium naproxen. Pet. 12–13. Petitioner contends that this mole equivalent range equals a range of from 2 to 8% by weight of the fill material. *Id.*

Patent Owner contends that the term about 5% should be given its plain and ordinary meaning of approximately 5%. Prelim. Resp. 8–9 (citing *Merck & Co. v. Teva Pharms. USA*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) ("the term 'about' should be given its ordinary and accepted meaning of 'approximately'"). Patent Owner argues that Petitioner's proposed construction is improper in that it embraces the original scope of the claims, which was given up when the claims were amended to recite 5% by weight. Prelim. Resp. 10. Patent Owner also contends that only claim 8 embraces the range recited by Petitioner and that one skilled in the art would interpret Examples 7 and 9–12 as teaching from 5 to 5.27% by weight lactic acid. *Id.* at 10–11.

We have considered the parties' arguments and conclude that, for purposes of this decision, the term "about 5% . . . by weight" should be given its ordinary meaning — approximately 5% by weight. During prosecution, Patent Owner pursued the claims that recited the limitation calling for "about 0.2 to about 1.0 mole equivalents of lactic acid per mole of naproxen sodium." Ex. 1006, 173–79. As Patent Owner points out, this is nearly the same amount of lactic acid as the range proposed by Petitioner in its proposed construction. Prelim. Resp. 11. In response to a rejection over the art, Patent Owner amended all the independent claims to recite the narrower limitation calling for 5% lactic acid by weight of the matrix. Ex. 1006, 207–16. Given that Patent Owner intentionally narrowed the scope of the claims to exclude a broader amount of lactic acid, we decline to adopt a construction that would enlarge the scope of the claims. We agree with Patent Owner that Petitioner's proposed construction would improperly broaden the scope of the claims to embrace a range of lactic acid given up

during prosecution. Prelim. Resp. 10–11. "[T]he prosecution history, while not literally within the patent document, serves as intrinsic evidence for purposes of claim construction. This remains true in construing patent claims before the PTO." *Tempo Lighting, Inc. v. Tivoli, LLC*, 742 F.3d 973, 977 (Fed. Cir. 2014). While we "must give the terms their broadest reasonable construction, the construction cannot be divorced from the specification and the record evidence." *In re NTP, Inc.*, 654 F.3d 1279, 1288 (Fed. Cir. 2011).

2. Fill Material

The term "fill material" appears in each of the challenged claims. Petitioner contends that the term "fill material" should be construed as "'the material for filling the soft gelatin capsule prepared by mixing the claimed ingredients in the claimed amounts prior to encapsulation." Pet. 13 (quoting Ex. 1001 ¶ 80). Petitioner contends that this is consistent with the instant specification, which teaches that "[t]he fill material is prepared by mixing the agent (such as a salt of the drug), the deionizing agent, water and polyethylene glycol at a temperature of 50°C to 70°C. The resulting solution is encapsulated using the appropriate gel mass." Ex. 1003, col. 5, ll. 51–55.

Patent Owner does not agree with Petitioner's proposed construction. Prelim. Resp. 12. Patent Owner contends that construction of the term "fill material" is not necessary to resolve the issues in the present proceeding. *Id.*

We have considered the parties' arguments. We agree with Patent Owner that the term need not be construed to resolve the issues presented in the Petition. Therefore, for purposes of this decision, we decline to expressly construe the term "fill material."

III. ANALYSIS

Petitioner contends that claims 1–38 are: (1) anticipated by Chen; (2) obvious over Chen; (3) obvious over Kim; (4) obvious over Kim in view of Chen; (5) anticipated by Schoenhard; or (6) obvious over Schoenhard. As discussed more fully below, we conclude that, on the record before us, Petitioner has not demonstrated that there is a reasonable likelihood that it will prevail on any of the listed grounds with respect to claims 1–38.

A. Anticipation by Chen

Chen discloses methods and compositions for improving the delivery of a hydrophobic therapeutic agent having at least one ionizable functional group by combining the therapeutic agent with an ionizing agent, a surfactant and one or more solubilizers. Ex. 1009, Abstract. The therapeutic agents useful in the compositions of Chen include naproxen and salts of naproxen. *Id.* at col. 7, ll. 40–46, col. 10, ll. 36–41. Ionizing agents used in Chen include citric and lactic acids that can be present in amounts ranging from 0.1 to 0.5 mole equivalents per mole equivalent of therapeutic agent with 0.5 mole equivalents preferred. *Id.* at col. 11, ll. 9–25, col. 12, ll. 30–35. Chen also discloses the addition of solubilizers including polyethylene glycol, polypropylene glycol, polyvinylpyrrolidone, and mixtures thereof. *Id.* at col. 31, l. 40–col. 32, l. 26.

"Under 35 U.S.C. § 102, every limitation of a claim must identically appear in a single prior art reference for it to anticipate the claim." *Gechter v. Davidson*, 116 F.3d 1454, 1457 (Fed. Cir. 1997).

Claim 1 is representative of the challenged claims and is directed to a pharmaceutical composition comprising a soft gelatin capsule containing:

(a) sodium naproxen salt; (b) about 5% lactic acid by weight of the matrix; and (c) polyethylene glycol.

Petitioner contends that "Chen discloses the same active agent, neutralized with the same acid, dissolved in the same solvent system, and encapsulated in the same soft gelatin capsules." Pet. 21.

Patent Owner contends that Chen does not teach all of the elements of claim 1. Prelim. Resp. 14. Specifically Patent Owner argues that Chen does not disclose a composition comprising about 5% lactic acid by weight of the fill material. *Id.* at 15–16. Patent Owner contends that Chen does not disclose the specific amounts of naproxen salt as required by claim 18. *Id.* at 21. Patent Owner also contends that even if all the elements of the claims were present in Chen, they are not arranged in the same manner as in claim 1. *Id.* at 21–26. Patent Owner contends that Petitioner has not established anticipation by Chen in that Petitioner's analysis relies on a reference in addition to Chen. *Id.* at 26–28.

The issue of whether Chen discloses the presence of lactic acid in an amount equal to 5% by weight of the fill material is dispositive.

Petitioner contends that Chen discloses a composition containing about 5% lactic acid based on the weight of the combined ingredients. Pet. 19–20. Petitioner bases this conclusion on the teaching in Chen that the ionizing agent should be preferably present in the composition in an amount equal to 0.5 mole equivalents per mole of therapeutic agent. *Id.* at 19. Petitioner's expert, Mr. Draper, opines that one skilled in the art after reading Chen would use an "880 ml" capsule[5] to encapsulate 220 mg of

[5] Patent Owner points out that Petitioner's and Mr. Draper's reference to an "880 ml capsule" appears to be an error in that such a capsule would be

naproxen sodium. Ex. 1001 ¶ 89; Pet. 19–20. Petitioner also contends that Chen "inherently teaches combining 250 mg [of] naproxen sodium and 60 mg [of] sodium lactate . . . . [which] equates to 48 grams of lactic acid." Pet. 25. Using these values, Mr. Draper calculates that lactic acid would be present in a composition containing 220 mg sodium naproxen in an amount of 4.4%, which the expert opines is about 5%. Ex. 1001 ¶ 89. Mr. Draper also opines that if an 800 ml capsule is used with a dosage of 250 mg of sodium naproxen as taught by Kim, then the amount of lactic acid would be about 5.5%. *Id.* Petitioner also contends that the examples of Chen supports the conclusion that 48 grams of lactic acid in one gram of filler material equates to about 5%. Pet. 25.

Patent Owner contends that while Chen discloses using lactic acid in a mole ratio of 0.5 moles of lactic acid per mole of active ingredient, there is nothing in Chen that discloses a specific amount of naproxen sodium to be included in the composition. Prelim. Resp. 16. Patent Owner contends that without knowing how much sodium naproxen is present, one skilled in the art cannot calculate how much lactic acid should be used. *Id.* at 16–17. Patent Owner also argues that Chen is silent as to the size of the capsule to be used. *Id.* at 17–18. Finally, Patent Owner contends that nothing in Chen teaches that the remainder of the matrix ingredients would have a density of 1 g/ml. *Id.* at 19.

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extremely large and impractical for human consumption. Prelim. Resp. 18 n.2. We agree with Patent Owner. According to the chart attached as Exhibit A to Exhibit 1001, a size 14 oblong gel cap would have a maximum volume of 1.06 ml, not 880 ml. Ex. 1001, A-1. None of the gel caps listed in Exhibit A show a volume of 880 ml. Similarly, Exhibit 1010 reports the use of an 800 mg capsule not an 800 ml capsule. Ex. 1010 ¶ 36.

We have considered the parties' arguments and the teachings of Chen and conclude that Petitioner has not adequately demonstrated that Chen discloses a composition comprising about 5% lactic acid by weight of the fill material. Petitioner has pointed to nothing in Chen that discloses the amount of naproxen to be used or the total amount of ingredients that comprise the fill material. Pet. 19–20. Instead Petitioner relies on the teachings of additional references and assumptions based outside the teachings of Chen. *See, e.g.*, Pet. 19 (relying on teachings of Kim for 250 mg dose of naproxen). Since Petitioner has not shown that Chen, by itself, discloses a composition comprising 5% lactic acid by weight of the matrix, Chen does not anticipate claim 1. "Anticipation requires that all of the claim elements and their limitations are shown in a single prior art reference." *In re Skvorecz*, 580 F.3d 1262, 1266 (Fed. Cir. 2009).

With respect to Petitioner's argument that Chen inherently teaches 250 mg of naproxen sodium with 48 mg of lactic acid (Pet. 25), we agree with Patent Owner that Petitioner has not pointed to any teaching in Chen that indicates that these amounts are necessarily present in the compositions of Chen. *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999).

Independent claims 10, 18, 20, and 21 also include the limitation calling for 5% lactic acid by weight of the fill material. Ex. 1003, col. 10, ll. 33, 64, col. 11, ll. 5, 12. Since, as discussed above, Chen does not teach this element, Chen does not anticipate these claims.

The remaining claims depend from claims 1, 10, 18, 20, or 21. *Id.* at col. 10, l. 1–col. 12, l. 25. The dependent claims also include the limitation calling for 5% lactic acid by weight of the fill material. Since Chen does not disclose this limitation, Chen does not anticipate the dependent claims.

B. Obviousness over Chen

The teachings of Chen are discussed above. Petitioner contends that if Chen does not anticipate the challenged claims, it renders the subject matter of the claims obvious. Pet. 21. Petitioner does not present an analysis showing obviousness based on Chen separate from its showing of anticipation by Chen. *Id.*

Patent Owner contends that Petitioner has failed to meet its burden of properly articulating the reasons behind its different grounds in the Petition. Prelim. Resp. 13. Patent Owner contends that Petitioner has failed to articulate why one skilled in the art would modify the teachings of Chen to produce the claimed invention. *Id.* at 31–33. Patent Owner also contends that Petitioner has failed to make a showing that one skilled in the art would have had a reasonable expectation of success in modifying Chen to achieve the claimed composition. *Id.* at 33–35. Patent Owner argues that Petitioner has not shown that the claimed amounts of lactic acid and naproxen sodium would have been generated through routine optimization. *Id.* at 35–36. Patent Owner also argues that there is evidence of unexpected results, which supports a conclusion of non-obviousness. *Id.* at 36–41.

A proper section 103 analysis requires "a searching comparison of the claimed invention—including all its limitations—with the teachings of the prior art." *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995).

"[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007).

"[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine elements in the way the claimed new invention does.

We have considered the parties' arguments and conclude that, on the present record, Petitioner has not established a reasonable likelihood that it would prevail in showing that the subject matter of the challenged claims would have been obvious over Chen. Petitioner has not shown why one skilled in the art, based on the teachings of Chen, either alone or in combination with other references, would have used 5% lactic acid in combination with naproxen sodium as required by the claims.

Petitioner contends that 5% lactic acid by weight of the fill material would have been a routine choice by one skilled in the art. Pet. 23–24. In support of this contention Petitioner relies on various calculations by Mr. Draper purporting to show that use of 5% lactic acid by weight of the fill material would naturally flow from the teachings of Chen and other references. *Id.* at 24–25.

Petitioner's contentions with respect to the amount of lactic acid being a matter of routine choice are based on an assumption that one skilled in the art would use either an 800 mg capsule or an 880 ml capsule and would use dosages of naproxen sodium of 220 mg and 250 mg. Pet. 19, 23–25. Petitioner, however, does not sufficiently explain why one skilled in the art would use the specific capsules and amounts of naproxen sodium used by its expert. *See id.*

Mr. Draper does not explain why he chose the 880 ml oval capsule for his calculations other than to suggest that it is a capsule size that one skilled

in the art would use following the teachings of Chen. Ex. 1001 ¶ 89. Petitioner and Mr. Draper point to nothing in Chen to support this conclusion. *See id.* A review of the evidence in this proceeding shows no teaching of an 880 ml capsule. Petitioner refers to a size 14 oblong capsule as having such a volume, however, Exhibit A to Petitioner's expert's declaration shows that a number 14 oblong capsule has a volume of from .75 to 1.06 ml, not 880 ml as stated by Petitioner and its expert Mr. Draper. Pet. 20; Ex. 1001, A–1.

Even if there were evidence of an 880 ml oval capsule, neither Petitioner nor Mr. Draper, have explained why one skilled in the art would have chosen such a capsule to encapsulate 220 mg of naproxen sodium. Selection of a different volume would result in a different weight percent of lactic acid since it is based on the total weight of all the ingredients included in the capsule. *See* Pet. 25.

Petitioner and Mr. Draper also fail to explain why Mr. Draper chose to use an oblong capsule for his calculations. Ex. 1001 ¶ 89. As Patent Owner's expert, Dr. Kahn explains, the art teaches that softgels are made in a variety of shapes including round, oval and oblong, which can accommodate a variety of different fill volumes. Ex. 2001 ¶ 38; Ex. 2023, 400.

With respect to an 800 mg capsule, while Kim teaches the use of an 800 mg capsule, Petitioner does not explain why one would use that size capsule other than to say that it would be a conventional capsule size. Pet. 19. Referring again to the table attached to Mr. Draper's declaration, there are numerous conventional capsule sizes and shapes, each having different volume ranges. Ex. 1001, A-1; *see also* Ex. 2001 ¶ 38; Ex. 2021, 611 (Fig.

17.1). Mr. Draper does not explain why one skilled in the art would use an 800 mg capsule over the other capsule sizes. As noted above, the volume of the capsule affects the calculation of the weight percent of lactic acid in the composition.

With respect to the amounts of naproxen sodium used by Mr. Draper in his calculations, as noted above, Chen is silent as to the amount of active agent to be used in his formulations. To remedy this deficiency, Petitioner turns to Kim and Roche's FDA filing to show that naproxen sodium is typically used in dosages of 220 mg and 250 mg. Pet. 24–25; Ex. 1010 ¶¶ 84–85, Tables 4a, 4b; Ex. 1025, 1. However, as Patent Owner points out, the art teaches that dosages for naproxen sodium range from as low as 50 mg to as high as 1.65 g. Prelim. Resp. 16–17. The evidence advanced by Petitioner discloses typical dosages of naproxen sodium of 275 mg and 500 mg. Ex. 1025. Neither Petitioner nor Mr. Draper explains why one skilled in the art would have chosen the specific amounts used by Mr. Draper to arrive at 5% lactic acid.

Given the unexplained "picking-and-choosing" activity in Petitioner's analysis, we are persuaded that Petitioner and its expert have impermissibly relied on hindsight in reaching their conclusion that the subject matter of the claims would have been obvious. It appears that Mr. Draper, with the limitation of 5% lactic acid in mind, selected the capsule sizes and naproxen sodium amounts that would lead to that specific weight percent of lactic acid. If different capsule sizes or different amounts of naproxen sodium were used, the calculated amount of lactic acid would be different. "We must still be careful not to allow hindsight reconstruction of references to reach the claimed invention without any explanation as to how or why the

references would be combined to produce the claimed invention." *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 n.3 (Fed. Cir. 2008).

As noted above, all of the claims challenged by Petitioner include the limitation calling for 5% lactic acid by weight of the fill material. Therefore, the subject matter of the challenged claims would not have been obvious over Chen.

For the reasons given above, we conclude that Petitioner has not established a reasonable likelihood that it would prevail in establishing that at least one of the challenged claims would have been unpatentable over Chen.

C. Obviousness over Kim, either Alone or in Combination with Chen

Petitioner contends that the subject matter of the challenged claims would have been obvious over either Kim alone or in combination with Chen. Pet. 35. Petitioner contends that Kim teaches solubilizing naproxen in a pharmaceutical composition by neutralizing a portion of the naproxen using sodium citrate. *Id.* at 35–36. Petitioner contends that Kim also teaches the use of polyethylene glycol and other solubilizers. *Id.* at 38. Petitioner contends that one skilled in the art would have substituted sodium or potassium lactate for sodium citrate as they are pharmaceutically acceptable salts of lactic acid and citric acid. Pet. 36. Petitioner further contends that one skilled in the art would have seen the two acids as equivalent with respect to neutralizing sodium naproxen. *Id.* Petitioner argues that the use of the acid salts to neutralize naproxen would have been the same as using the respective acids to neutralize naproxen sodium. *Id.*

Petitioner contends that it would have been obvious to one skilled in the art to use lactic acid to neutralize naproxen sodium. *Id.*

With respect to Chen, Petitioner contends that Chen teaches that lactic acid and citric acid can both be used to partially neutralize naproxen sodium. Pet. 37.

Using the examples of Kim as a guide, Petitioner contends that one skilled in the art would use the same moles of lactic acid as the moles of sodium citrate present in the examples of Kim. *Id.* at 39 ("One can thus arrive at 'about 5% lactic acid' by showing that an equivalent amount of citric acid would be present . . . ."). Petitioner contends that based on the amount of naproxen present in the examples and the total amount of ingredients in the examples, lactic acid would be present in an amount of 5% by weight of the matrix. *Id.*

Patent Owner contends that neither Kim nor Chen shows that lactic acid and citric acid are functional equivalents. Prelim. Resp. 44. Patent Owner contends that Petitioner has not identified any reason why one skilled in the art would have substituted lactic acid for citric acid and expected to achieve the same results. *Id.* at 45. Patent Owner argues that the evidence of equivalence cited by Petitioner in fact demonstrates that the two acids are not equivalent. *Id.* at 46–47. Patent Owner also notes that Kim teaches that dexibuprofen and naproxen have very different solubilities depending on the solvent used. *Id.* at 48–49 (citing Ex. 1010 ¶ 80, Table 2). Patent Owner also contends that Petitioner has not shown that one skilled in the art would have had a reasonable expectation of success in modifying the compositions of Kim nor has Petitioner established that the amounts of naproxen used by

its expert are ones that are routinely used by those in the art. Prelim. Resp. 50–51.

Having considered the parties' arguments and evidence, we conclude that on this record and for purposes of this decision, Petitioner has not established a reasonable likelihood that it would prevail in showing that any of the challenged claims would have been unpatentable over Kim alone or Kim in combination with Chen.

Once again, the issue of whether the references teach or suggest the use of 5% lactic acid by weight of the fill material is dispositive of the issue of whether Petitioner has shown that the subject matter of the challenged claims would have been obvious over Kim alone or combined with Chen. Since we find that the combination of references do not teach or suggest this limitation, we need not address the remainder of Patent Owner's arguments.

As Patent Owner points out, Kim does not disclose the use of lactic acid but teaches the use of potassium and sodium citrate as de-ionizing agent for naproxen. Prelim. Resp. 43; Ex. 1010 ¶ 41. Petitioner points to nothing in Kim that teaches the interchangeability of sodium citrate or potassium citrate with lactic acid. To address this deficiency in Kim, Petitioner points to Chen, which teaches that lactic acid and citric acid can both be used as ionizing agents to deprotonate active ingredients such as naproxen. Pet. 37; Ex. 1009, col. 11, ll. 10–25. Petitioner also relies on the declaration of Mr. Draper to show that one skilled in the art would understand that when using naproxen sodium versus naproxen one would use an organic acid instead of the salt and that one could use lactic acid for citric acid. Pet. 36; Ex. 1001 ¶ 98. Mr. Draper assumes that one skilled in the art would use the same amount of lactic acid as citric acid in making his calculation of the

percentage of lactic acid that would be used in a naproxen sodium containing composition. *See* Ex. 1001, ¶¶ 62–63.

As Patent Owner points out, Petitioner has not demonstrated sufficiently that citric acid and lactic acid are functional equivalents. Prelim. Resp. 44–47. Citric acid and lactic acid are structurally different, with citric acid having three carboxyl groups and is capable of donating three protons, whereas lactic acid has only one carboxyl group and can only donate one proton. Ex. 1023; Ex. 2001 ¶ 45; Ex. 2022, 189–190. Moreover, while Chen may teach that lactic acid and citric acid can both be used as ionizing agents, Chen does not teach that they can be used in equal amounts. Prelim. Resp. 48. In fact given the different number of protons that the acids can deliver, one skilled in the art would not expect to use them in the same amounts. *See* Ex. 2001 ¶¶ 45–46.

The functional differences between lactic acid and citric acid is borne out by the data submitted by Patent Owner to the European Patent Office in connection with a related application. Ex. 1007, 414–21. The data demonstrates that when equal amounts of citric acid and lactic acid are used with equal amounts of naproxen sodium, different results are achieved. For example, compositions 8 and 11, which contain lactic acid, produced a "clear solution," whereas compositions 13–15, comprising citric acid, produced precipitates or a white paste. *Id.* at 419–20 (Table 8). In addition, the lactic acid-containing compositions showed undetectable levels of PEG ester after stress at 60° C for 7 days whereas the citric acid compositions showed significant levels of PEG esters when subjected to the same stress. *Id.*

Kim also does not teach a composition containing both naproxen and sodium citrate. To remedy this deficiency, Mr. Draper looks to the examples of Kim where sodium citrate is used with dexibuprofen. Ex. 1001, ¶¶ 62–63.

Mr. Draper contends that one skilled in the art would have understood that dexibuprofen and naproxen are close structural analogs and that one skilled in the art would use the same amount of sodium citrate for both compounds. *Id.* Mr. Draper, however, offers no support for this conclusion. *Id.*

A careful reading of Kim demonstrates that there are significant differences between dexibuprofen and naproxen, especially when it comes to solubility. Kim specifically teaches that naproxen has a significantly lower solubility than dexibuprofen in certain common solvents. Ex. 1010 ¶¶ 80–81, Table 2. We agree with Patent Owner that one skilled in the art, reading Kim would not conclude that dexibuprofen and naproxen are analogs. Prelim. Resp. 49–50.

Again, since all of the challenged claims include the limitation calling for 5% lactic acid by weight of the fill material, we conclude that, on the record before us, Petitioner has not adequately shown that Kim, either alone or in combination with Chen, teaches or suggests the subject matter of the challenged claims.

Based on the foregoing, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that at least one of the challenged claims would have been unpatentable over Kim alone or combined with Chen.

D. Anticipation by Schoenhard or Obviousness in view of Schoenhard

Petitioner contends that the challenged claims are either anticipated by or would have been obvious over the teachings of Schoenhard. Pet. 49. Petitioner contends that Schoenhard teaches oral dosage forms of active ingredients such as naproxen comprising controlled release cores and immediate release gelatin capsule coats. *Id.*; Ex. 1011, Abstract. Petitioner contends that Schoenhard teaches the use of lactic acid as an osmotic agent, which enhances the absorption of the active agent. Pet. 49; Ex. 1011 ¶¶ 86, 105. Petitioner contends that Stark[6], the teachings of which are incorporated by reference into Schoenhard, teaches that the lactic acid and naproxen should be present in a molar ratio of 1:1. Pet. 49–50; Ex. 1011 ¶ 86; Ex. 1019, col. 4, ll. 50–52. Petitioner contends that one skilled in the art would routinely determine the amount of lactic acid following the teachings of Schoenhard as supplemented by Stark. Pet. 49.

Petitioner acknowledges that Schoenhard does not teach a specific amount of naproxen (Pet. 50), but Mr. Draper opines that one skilled in the art would use a child's dose of naproxen, i.e., 125 mg, in an 880 ml capsule. *Id.*; Ex. 1001 ¶ 105. Using a 1:1 ratio of lactic acid to naproxen sodium, Mr. Draper calculates that the amount of lactic acid present would be about 5.6% by weight. *Id.* Mr. Draper also calculates that for a dosage of 220 mg naproxen sodium in an 880 ml capsule the amount of lactic acid would be 9%. Pet. 51; Ex. 1001 ¶¶ 104–105.

Patent Owner contends that Schoenhard does not teach or suggest all of the elements of the claims. Prelim. Resp. 53. Specifically, Patent Owner contends that Schoenhard does not teach the use of lactic acid with naproxen

[6] Stark et al., US 6,066,339, issued May 23, 2000 ("Stark") (Ex. 1019).

sodium. *Id.* at 55–57. Patent Owner also argues that Schoenhard does not teach that the lactic acid should be present in an amount equal to 5% by weight of the total composition and that Mr. Draper's calculations are based on improper assumptions. *Id.* at 57–60. Patent Owner contends that Petitioner has failed to explain why one skilled in the art would modify the teachings of Schoenhard to develop the claimed composition nor has Petitioner shown that one skilled in the art would have had a reasonable expectation of success in modifying the composition of Schoenhard. *Id.* at 60–62. Patent Owner also argues that Petitioner has not shown that the claimed composition would have been developed through routine optimization. *Id.* at 62–63

Patent Owner contends that Petitioner has not shown that the challenged claims would have been obvious over Schoenhard combined with Chen. Prelim. Resp. 64. Patent Owner argues that Petitioner's analysis of the combination of Schoenhard and Chen is limited to the conclusory statement that the claims would have been obvious over the combined references. *Id.* Finally, Patent Owner contends that Petitioner has failed to properly address the evidence showing objective indicia of non-obviousness. *Id.* at 65–66.

We have considered the parties' arguments and the evidence of record and conclude that Petitioner has not established a reasonable likelihood that it will prevail in showing that any of the challenged claims are anticipated by or would have been unpatentable as obvious over Schoenhard.

1. Anticipation

As noted above, Petitioner acknowledges that Schoenhard does not teach a specific amount of naproxen salt and only teaches a ratio of lactic

acid to naproxen salt, not a specific amount of lactic acid. In order to arrive at 5% lactic acid by weight of fill material, Mr. Draper uses a naproxen sodium dosage of 125 mg and a capsule size of 880 ml. Ex. 1001 ¶¶ 104–105. Mr. Draper does not point to any teaching in Schoenhard that supports his conclusion that the composition disclosed in Schoenhard would contain 5% lactic acid. Since Petitioner has not demonstrated that Schoenhard teaches all the elements of the claims, we conclude that Petitioner has not established a reasonable likelihood that it would prevail in showing that the challenged claims are anticipated by Schoenhard.

2. Obviousness

As with the other grounds asserted by Petitioner, we focus our analysis on the issue of whether Schoenhard teaches or suggests a composition containing 5% lactic acid by weight of the matrix. We agree with Patent Owner that the calculations made by Mr. Draper regarding the weight percent of lactic acid in the composition are flawed and do not support a conclusion of obviousness. Prelim. Resp. 57–60.

In support of its contentions regarding obviousness, Petitioner relies on the calculations of its expert, Mr. Draper, to show that one skilled in the art, following the teachings of Schoenhard, would be led to develop the claimed composition, particularly a composition comprising sodium naproxen and 5% by weight lactic acid. Pet. 49–50. Mr. Draper bases his calculation on an assumption that Schoenhard teaches using a 1:1 mole ratio of naproxen sodium to lactic acid. Ex. 1001 ¶¶ 103–105. This ratio is actually taught by Stark, which is incorporated by reference into Schoenhard. *Id.* ¶ 103. As Patent Owner has demonstrated, however, a careful reading of Stark reveals that Stark teaches a 1:1 weight ratio, not a

mole ratio of ingredients. Prelim. Resp. 57–58; Ex. 2001 ¶¶ 74–75; Ex. 1019 (Examples 1–6). Use of a weight ratio rather than a mole ratio would yield a different amount of lactic acid present in the composition.

Mr. Draper also assumes that one skilled in the art would use a dosage of 125 mg naproxen sodium together with a capsule size of 880 ml without explaining why one skilled in the art would use that particular dosage in a capsule of that size. Ex. 1001 ¶¶ 104–105. As discussed above, Petitioner has not demonstrated that any of the cited references teaches a softgel capsule with a volume of 880 ml. Moreover, Mr. Draper does not explain why one skilled in the art would select a dosage of 125 mg and then encapsulate that dosage into an 880 ml capsule, especially given that 125 mg is a child's dose that is incorporated into an elixir and not a tablet or capsule. Ex. 1025, 1. As shown by Petitioner's own claim chart, when an adult dosage of 220 mg sodium naproxen is used in an 880 ml capsule, the amount of lactic acid is calculated to be 9% by weight. Pet. 51

Once again, Petitioner and Mr. Draper appear to have arbitrarily selected dosages and capsule sizes so as to achieve the desired result of 5%lactic acid by weight of the fill material. As Petitioner's own claim chart shows, when other standard amounts of naproxen are used in the calculation, the resulting weight percent is outside the scope of the claims. Our conclusion that Petitioner and Mr. Draper improperly used hindsight in their analysis is reinforced by the fact Mr. Draper offers no reasons for his selection of the specific dosages and capsule sizes. Ex. 1001 ¶ 110.

We conclude that Petitioner has failed to establish a reasonable likelihood that it would prevail in showing that at least one of the challenged

claims would have been unpatentable over Schoenhard, either alone are in combination with Chen.

IV. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has not established a reasonable likelihood of prevailing on its assertion that any of the challenged claims of the '978 patent are anticipated by Chen or obvious in view of Chen, Kim, Kim combined with Chen, anticipated by Schoenhard, or obvious in view of Schoenhard.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied with respect to all of the claims of the '978 patent and no trial is instituted with respect to that patent.

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