



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes application details for 12/267,963 and examiner information for LOPEZ, RICARDO E.

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

KTSDocketing2@kilpatrick.foundationip.com
ipefiling@kilpatricktownsend.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

*Ex parte* JACOBUS HENDRICUS ANTONIUS VAN DER WOUDE,  
JACOB CORNELIS DIJT, JOHN THEO PENNING,  
RONALD BOELMAN, and JOHANNES LEONARDUS TABAK

---

Appeal 2018-008500  
Application 12/267,963  
Technology Center 1700

---

Before KAREN M. HASTINGS, MICHAEL P. COLAIANNI, and  
JANE E. INGLESE, *Administrative Patent Judges*.

INGLESE, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant<sup>1</sup> requests our review under 35 U.S.C. § 134(a) of the Examiner's decision to finally reject claims 1, 4–9, 11–14, 16, 17, 19–22, 24–37, and 39–47.<sup>2</sup> We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

We AFFIRM.

---

<sup>1</sup> Appellant identifies Electric Glass Fiber American, LLC as the real party in interest. Appeal Brief filed February 23, 2018 (“Appeal Br.”), 1.

<sup>2</sup> Final Office Action entered May 10, 2017 (“Final Act.”), 1.

### CLAIMED SUBJECT MATTER

Appellant claims an aqueous sizing composition for glass fibers for reinforcing organic composite materials. Appeal Br. 1–3. Independent claims 1 and 46 illustrate the subject matter on appeal, and are reproduced below with contested language italicized:

1. An aqueous sizing composition for glass fibers for reinforcing organic composite materials, comprising:
  - an acid-amine component in an amount up to 80 weight percent on a total solids basis,
    - the acid-amine component comprising molecules of at least one primary amine associated with molecules of at least one phosphorus-containing acid or sulfur-containing acid,*
    - wherein the molecules of the at least one amine are associated with the molecules of the at least one phosphorus-containing acid or sulfur-containing acid through Lewis acid-base interactions,
    - wherein the phosphorus atom in the phosphorus-containing acid has an oxidation state that is less than 5,
    - wherein *the molar ratio of the at least one phosphorus-containing acid or sulfur-containing acid to the amine is between about 0.1 and about 1,* and
    - wherein the acid-amine component is not formed using salts of phosphorus-containing acids or salts of sulfur-containing acids;
  - a film former in an amount greater than 5 weight percent on a total solids basis; and
  - a lubricant in an amount less than 5 weight percent on a total solids basis.
  
46. An aqueous sizing composition for glass fibers for reinforcing organic composite materials, comprising:
  - (a) from about 3 to about 9 weight percent hypophosphorus acid on a total solids basis;
  - (b) *from about 25 to about 40 weight percent aminosilane on a total solids basis, wherein the aminosilane comprises a primary amine;* and

*(c) from about 49 to about 70 weight percent film-former on a total solids basis.*

App. Br. 20, 26 (Claims Appendix) (emphasis added and spacing altered).

## REJECTIONS

The Examiner maintains the following rejections in the Examiner's Answer entered June 14, 2018:<sup>3</sup>

- I. Claims 1, 4–8, 11–17, 19–22, 24–35, 37, 39–44, 46, and 47 under 35 U.S.C. § 103(a) as unpatentable over Augier<sup>4</sup> in view of Schell<sup>5</sup>;
- II. Claims 9 and 36 under 35 U.S.C. § 103(a) as unpatentable over Augier in view of Schell and Hansen<sup>6</sup>; and
- III. Claim 45 under 35 U.S.C. § 103(a) as unpatentable over Augier in view of Schell and Puckett<sup>7</sup>.

## FACTUAL FINDINGS AND ANALYSIS

Upon consideration of the evidence relied upon in this appeal and each of Appellant's timely contentions,<sup>8</sup> we affirm the Examiner's rejections

---

<sup>3</sup> Although the Examiner rejects claims 28–33 on the ground of nonstatutory obviousness-type double patenting over certain claims of copending U.S. patent application serial number 13/075,640 (Final Act. 3–4), patent application serial number 13/075,640 was abandoned, rendering the obviousness-type double patenting rejection moot.

<sup>4</sup> Augier et al., US 5,736,246, issued April 7, 1998 (“Augier”).

<sup>5</sup> Schell et al., US 6,207,737 B1, issued March 27, 2001 (“Schell”).

<sup>6</sup> Hansen et al., US 2009/0227706 A1, published September 10, 2009 (“Hansen”).

<sup>7</sup> Puckett, US 2005/0100734 A1, published May 12, 2005.

<sup>8</sup> We do not consider any new argument Appellant presents in the Reply Brief that Appellant could have raised in the Appeal Brief. 37 C.F.R.

of claims 1, 4–9, 11–14, 16, 17, 19–22, 24–37, and 39–47 under 35 U.S.C. § 103(a), for the reasons set forth in the Final Action, the Answer, and below.

We review appealed rejections for reversible error based upon the arguments and evidence the appellant provides for each issue the appellant identifies. 37 C.F.R. § 41.37(c)(1)(iv); *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (Explaining that even if the Examiner had failed to make a prima facie case, “it has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections.”)).

Rejection I: claims 1, 4–8, 11–17, 19–22, 24–35, 37, 39–44, 46, and 47 under 35 U.S.C. § 103(a) as unpatentable over Augier in view of Schell

Appellant presents arguments directed to independent claims 1 and 21, which Appellant argues together, and directed to independent claim 46. Appeal Br. 4–15. We select claim 1 as representative of claims 1, 4–8, 11–17, 19–22, 24–35, 37, 39–44, and decide the appeal as to claims 1, 4–8, 11–17, 19–22, 24–35, 37, 39–44 based on claim 1 alone, and select independent claim 46 as representative of claims 46 and 47, and decide the appeal as to claims 46 and 47 based on claim 46. 37 C.F.R. § 41.37(c)(1)(iv).

*Claims 1, 4–8, 11–17, 19–22, 24–35, 37, 39–44*

Augier discloses a sizing composition used for “coating glass strands for reinforcement of organic and/or inorganic materials and providing corrosion resistance thereto.” Augier col. 2, ll. 39–54. Augier discloses that

---

§ 41.37(c)(1)(iv); 37 C.F.R. § 41.41(b)(2) (arguments raised for the first time in the Reply Brief that could have been raised in the Appeal Brief will not be considered by the Board unless good cause is shown).

the glass strands are “preferably composed of filaments having a diameter of between 5 and 24  $\mu\text{m}$ .” Augier col. 3, ll. 35–41, col. 4, ll. 36–45.

Augier discloses that the sizing composition comprises a silane of the formula  $\text{Si}(\text{R}^1)(\text{R}^2)(\text{R}^3)(\text{R}^4)$  in which  $\text{R}^1$  and  $\text{R}^2$  are alkoxy groups and  $\text{R}^3$  and  $\text{R}^4$  can be hydrocarbon radicals optionally containing one or more nitrogens. Augier col. 2, ll. 39–52. Augier discloses that that the sizing composition “may include one or more other silanes generally acting as coupling agents, especially one or more silanes commonly used in sizes.” Augier col. 6, ll. 50–54. Augier discloses that the maximum amount of all silanes in the sizing composition should not exceed 25% by weight of a dry extract of the composition. Augier col. 6, ll. 62–64. Augier discloses that the sizing composition can include other components commonly used in sizing compositions, such as film forming agents, in an amount preferably less than 30% by weight of a dry extract of the composition. Augier col. 8, ll. 12–18.

Augier discloses that the sizing composition can also include at least one phosphonic acid or phosphonic acid derivative (claims 1 and 4), and discloses that when glass strands coated with the composition are intended for reinforcement of an alkaline material such as cement, the sizing composition includes a silane as described above, optionally an adhesive having an one or more epoxy functional groups, and at least one phosphonic acid or phosphonic acid derivative. Augier col. 8, ll. 42–48. Augier discloses that:

The alkali-resistant glass strands coated with the size according to the present invention are thus advantageous not only for the direct reinforcement of corrosive inorganic materials, including alkaline materials such as cement, but also, *and even more surprisingly and advantageously, for the reinforcement of organic materials which may or may not be intended to be*

*subjected to high stresses in a corrosive medium (for example in cement).*

Augier col. 5, ll. 3–10 (emphasis added).

Augier discloses that the amount of phosphonic acid included in the sizing composition “is generally between 0 and 40% by weight of the dry extract of the composition and preferably, when the glass strands are intended to be combined directly with an alkaline inorganic material such as cement, between 10 and 40% by weight of the dry extract of the composition.” Augier col. 8, ll. 6–11.

The Examiner finds that although Augier discloses that the sizing composition can include “other silanes generally acting as coupling agents,” Augier does not disclose that such additional silanes include a primary amine, and the Examiner relies on Schell’s disclosure of coupling agents having primary amines. Final Act. 5 (emphasis omitted). More specifically, Schell discloses a sizing composition for glass fibers used to reinforce thermoplastic materials such as polyolefins. Schell col. 1, ll. 15–18. Schell discloses that the sizing composition comprises a coupling agent, a film-forming material, and a stabilizer. Schell col. 2, ll. 10–17. Schell discloses that the film-forming material is generally present in the sizing composition in an amount ranging from about 50 weight percent to about 90 weight percent based on the total solids content of the sizing composition. Schell col. 6, ll. 21–26. Schell discloses that suitable coupling agents include functional organo silanes, such as 3-aminopropyldimethylethoxysilane, gamma-aminopropyltriethoxysilane, gamma-aminopropyltrimethoxysilane, beta-aminoethyltriethoxysilane, and N-beta-aminoethylaminopropyltrimethoxysilane, which include primary amine

groups. Schell col. 4, ll. 47–49, col. 5, ll. 7–12.

Based on these disclosures in Augier and Schell, the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of Appellant’s invention to substitute a functional organo silane coupling agent as disclosed in Schell for the silane coupling agent disclosed in Augier, because both silanes are taught to be useful as coupling agents in sizing compositions for coating glass strands used to reinforce organic composite materials. Final Act. 6.

Appellant argues that one of ordinary skill in the art would not have combined the “disparate teachings” of Augier and Schell because Augier is “directed only to highly alkaline inorganic composites,” while Shell is directed to “organic composites.” Appeal Br. 7. Appellant argues that “Augier’s use of at least one phosphonic acid or phosphonic acid derivative occurs *only* in an embodiment where the glass fibers are reinforcing an *inorganic* material, namely, cement, which is alkaline.” Appeal Br. 7 (citing Augier col. 7, ll. 42–48). Appellant argues that “the compositions of Augier that comprise a phosphonic acid or a phosphonic acid derivative are taught as being useful for alkaline inorganic composites, but not for organic composites, which generally do not suffer from excess alkalinity.” *Id.* at 8 (citing Augier col. 13, ll. 25–54 (Example 12)). Appellant argues that “Schell describes polyolefin polymer composites,” and “it would have been clear to one of ordinary skill from the teachings of Augier that the phosphonic acid or a phosphonic acid derivative is present to neutralize the alkaline conditions in inorganic materials such as cement, and would not serve the same purpose in the organic composites of Schell.” Appeal Br. 8 (citing Schell Abstr.). Appellant argues that one of ordinary skill in the art,

therefore, would not have had a reasonable expectation of success for the proposed combination of Augier and Schell, which “are directed to non-analogous uses.” Appeal Br. 11.

As discussed above, however, Augier explicitly discloses that glass strands coated with the sizing composition of Augier’s invention can “surprisingly and advantageously” be used to reinforce *organic materials*. Augier col. 5, ll. 3–10. And contrary to Appellant’s arguments, Augier’s disclosure of including at least one phosphonic acid or phosphonic acid derivative in the sizing composition described in the reference is not limited to only an embodiment in which glass fibers coated with such a sizing composition are used to reinforce alkaline inorganic materials, such as cement. Rather, as discussed above, Augier more generally discloses that the sizing composition described in the reference can include at least one phosphonic acid or phosphonic acid derivative (claims 1 and 4), and this general disclosure does not specify any limitation as to the particular type of composite materials that can be successfully reinforced with glass fibers coated with such a sizing composition.

In addition, as also discussed above, Augier discloses that the amount of phosphonic acid included in the sizing composition “is generally between 0 and 40% by weight of the dry extract of the composition and preferably, when the glass strands are intended to be combined directly with an alkaline inorganic material such as cement, between 10 and 40% by weight of the dry extract of the composition.” Augier col. 8, ll. 6–11. Augier thus differentiates between using the sizing composition described in the reference to coat glass strands for reinforcement of alkaline inorganic material such as cement, from using the sizing composition to coat glass

strands for reinforcement of other materials, by indicating that differing amounts of phosphonic acid should be included in sizing compositions used for different applications. In so doing, Augier implicitly indicates that phosphonic acid can be included in sizing compositions used to coat glass strands for reinforcement of materials other than alkaline inorganic materials. In other words, Augier's explicit disclosure of including a different amount of phosphonic acid in sizing compositions used to coat glass strands for reinforcement of alkaline inorganic materials (10 and 40%) than for inclusion in sizing compositions generally (0 and 40%), reasonably would have indicated to one of ordinary skill in the art that use of Augier's sizing composition including phosphonic acid is not limited to applications in which the composition is used to coat glass strands for reinforcement of alkaline inorganic materials.

Augier's disclosures as a whole, therefore, would have indicated to one of ordinary skill in the art that the sizing composition of Augier's invention comprising a phosphonic acid could be used to coat glass strands for reinforcement of organic materials. In view of Schell's disclosure of functional organo silanes suitable for use as coupling agents in a sizing composition applied to glass fibers for reinforcing thermoplastics such as polyolefins (organic materials), one of ordinary skill in the art reasonably would have been led to use a functional organo silane coupling agent as disclosed in Schell as the silane coupling agent in Augier's sizing composition, with a reasonable expectation of successfully using Augier's modified sizing composition to coat glass strands for reinforcement of organic materials. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (quoting *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282 (1976) (“[W]hen a

patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.”); *In re Kubin*, 561 F.3d 1351, 1360 (Fed. Cir. 2009) (“Obviousness does not require absolute predictability of success . . . all that is required is a reasonable expectation of success” (emphasis omitted) (citing *In re O’Farrell*, 853 F.2d 894, 903–04 (Fed. Cir. 1988))).

Appellant argues that “one [of] ordinary skill in the art would not have combined Augier and Schell” because the Examiner’s “proposed combination of Augier and Schell presents incompatibilities of chemicals of Augier with chemicals of Schell.” Appeal Br. 11. Appellant argues that “Augier’s compositions comprise a large amount of adhesive having an epoxy or a polyester functionality,” and one of ordinary skill in the art would have expected that the primary amines disclosed in Schell could react with such epoxy and polyester groups to form amino-alcohols and amides, instead of forming an acid-amine component as recited in claim 1. Appeal Br. 11–12. Appellant argues that one of ordinary skill in the art also would have understood that phosphonic acid is present in Augier’s sizing composition to neutralize alkaline conditions in cement, and if the basic primary amines disclosed in Schell were added to Augier’s inorganic cement composite compositions, the primary amines would decrease the neutralizing ability of Augier’s composition, rendering it unsuitable for the intended purpose of neutralizing alkaline inorganic composite materials. Appeal Br. 12.

As discussed above, however, Augier’s disclosures as a whole would have indicated to one of ordinary skill in the art that suitable applications for Augier’s sizing composition are not limited to reinforcement of alkaline

inorganic composite materials. Rather, Augier explicitly discloses that Augier's sizing composition can be used to coat glass strands for reinforcement of organic materials. Contrary to Appellant's arguments, the intended purpose of Augier's sizing composition is, therefore, not limited to neutralizing alkaline inorganic composite materials. We find no evidence on the record before us establishing that adding primary amines as disclosed in Schell to Augier's sizing composition would render the composition unsuitable for its intended purpose of coating glass strands used to reinforce organic materials.

Furthermore, Appellant does not provide any evidence to support the asserted chemical incompatibilities between the primary amines disclosed in Schell and the components of Augier's sizing composition, including any evidence to support the assertion that one of ordinary skill in the art would have expected that the primary amines disclosed in Schell could react with such epoxy and polyester groups to form amino-alcohols and amides. Appellant's unsupported assertions do not constitute evidence that is necessary to establish the asserted chemical incompatibilities. *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) ("An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness."); *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017) ("Attorney argument is not evidence" and cannot rebut other admitted evidence.); *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974) ("Attorney's argument in a brief cannot take the place of evidence."); *In re Schulze*, 346 F.2d 600, 602 (CCPA 1965) ("Argument in the brief does not take the place of evidence in the record.").

Appellant argues that Augier does not disclose a molar ratio of phosphorus-containing acid to amine of between about 0.1 and about 1 as recited in claim 1. Appeal Br. 13–14. Appellant argues that Augier instead discloses that the maximum amount of silanes in Augier’s sizing composition should not exceed 25 % by weight, and the amount of phosphonic acid included in the composition is generally between 0 and 40 % by weight. *Id.* at 14. Appellant argues that these disclosures “teach[] an infinite number of ratios of silane to phosphonic acid” because “if one takes the highest weight percent of phosphonic acid, 40 wt %, and divides by the lowest weight percent of amine, 0 wt. %, the ratio is infinite, since one cannot divide by zero” and “if one takes the lowest weight percent of phosphonic acid, 0 wt. %, and divides by the highest weight percent of amine, 25 wt. %, the ratio is zero.” *Id.*

As the Examiner explains (Ans. 21), however, “where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456 (CCPA 1955). Thus, “[n]ormally, it is to be expected that a change in temperature, or in concentration, or in both, would be an unpatentable modification.” *Id.* at 456; *see also Peterson*, 315 F.3d at 1330 (“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.”).

One of ordinary skill in the art seeking to produce a sizing composition as disclosed in Augier modified as suggested by Schell would have determined appropriate amounts of phosphonic acid and primary

amine-containing functional organo silane coupling agent to include in the composition, and would have arrived at optimal amounts, such as amounts that would result in a molar ratio of phosphonic acid to primary amine of between about 0.1 and about 1 as recited in claim 1, through nothing more than routine experimentation. *Aller*, 220 F.2d at 456. On the record before us, Appellant does not argue, much less demonstrate, the criticality of the molar ratio range recited in claim 1, and Appellant's argument that Augier does not disclose the molar ratio of phosphorus-containing acid to amine recited in claim 1 is, therefore, unpersuasive of reversible error. *Woodruff*, 919 F.2d at 1578; *Jung*, 637 F.3d at 1365.

Appellant argues that Schell teaches away from independent claim 1 "by expressly using the conjugate base salts derived from phosphorus-containing acids instead of using the phosphorus-containing acids in their acidic form" as recited in claim 1. Appeal Br. 8 (citing Shell col. 2, ll. 17–43).

Although Schell may disclose including conjugate base salts derived from phosphorus-containing acids in the sizing compositions described in the reference, rather than phosphorus-containing acids in their acidic form as recited in claim 1, "mere disclosure of alternative designs does not teach away." *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Rather, teaching away requires "clear discouragement" from implementing a technical feature. *In re Ethicon, Inc.*, 844 F.3d 1344, 1351 (Fed. Cir. 2017); *see also Meiresonne v. Google, Inc.*, 849 F.3d 1379, 1382 (Fed. Cir. 2017) ("A reference that 'merely expresses a general preference for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into' the claimed invention does not teach away" (quoting

*Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013).)).

We find no disclosure in Schell that criticizes, discredits, or otherwise would have discouraged one of ordinary skill in the art from using a phosphorous-containing acid in a sizing composition for a fiber glass strand as recited in claim 1, and Appellant does not identify any such disclosure in Schell. Accordingly, contrary to Appellant's arguments, Schell does not teach away from the sizing composition recited in claim 1.

Appellant argues that the Declaration of inventor Jacob Cornelis Dijt filed December 29, 2014 includes experimental examples that “demonstrate unexpected benefits of embodiments of the claimed sizing compositions (Compositions A, B, and F–K) with respect to sizing compositions that employ the conjugate base form of the phosphorus-containing acid (Compositions D, E, and L–Q).” Appeal Br. 12–13 (citing Dijt Declaration pp. 7 and 8). Appellant argues that “Example 4 of the present application [also] demonstrates unexpected benefits of embodiments of the claimed sizing compositions (Compositions A and B) when compared with sizing compositions that employ the conjugate base form of the phosphorus-containing acid (Compositions D and E).” Appeal Br. 12–13 (citing Spec. pg. 15, l. 27–pg. 27, l. 25).

It is well-established, however, that “when unexpected results are used as evidence of nonobviousness, the results must be shown to be unexpected compared with the closest prior art.” *In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991). As discussed above, the sizing composition disclosed in Augier includes phosphonic acid, rather than a conjugate base form of a phosphorus-containing acid. The relied-upon examples described in the Dijt Declaration comparing “claimed sizing

compositions” to compositions that included a conjugate base form of a phosphorus-containing acid, therefore, do not provide a comparison between the sizing composition recited in claim 1 and the sizing composition of the closest prior art, Augier. Accordingly, the relied-upon comparison set forth in the Digt Declaration does not support Appellant’s assertion of unexpected results. *Baxter*, 952 F.2d at 392.

Considering the totality of the evidence relied-upon in this appeal, a preponderance of the evidence weighs in favor of the Examiner’s conclusion of obviousness. We, accordingly, sustain the Examiner’s rejection of claims 1, 4–8, 11–17, 19–22, 24–35, 37, and 39–44 under 35 U.S.C. § 103(a).

*Claims 46 and 47*

Independent claim 46 recites an aqueous sizing composition for glass fibers for reinforcing organic composite materials comprising in part, from about 25 to about 40 weight percent aminosilane on a total solids basis, and from about 49 to about 70 weight percent film-former on a total solids basis.

Appellant argues that the Examiner relies on Schell’s disclosure “that the film forming component is generally present” in Schell’s sizing composition in an amount of from 50 to about 90 weight” percent, while ignoring Augier’s explicit teaching of including a film former in Augier’s sizing composition in an amount of preferably less than 30 % by weight, which Appellant argues teaches away from using more than 30 % by weight film former in a sizing composition. Appeal Br. 14–15.

A range may be disclosed by multiple prior art references, however, where the various values disclosed in the prior art references are generally directed to the same subject matter. *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1322 (Fed. Cir. 2004).

As discussed above, Augier and Schell both disclose sizing compositions for glass strands used to reinforce organic materials. Augier discloses that the sizing composition described in the reference can include components commonly used in sizing compositions, such as film forming agents, in an amount preferably less than 30% by weight of a dry extract of the composition. Augier col. 8, ll. 12–18. Schell discloses that the sizing composition described in the reference includes a film-forming material generally present in an amount ranging from about 50 weight percent to about 90 weight percent based on the total solids content of the sizing composition. Schell col. 6, ll. 21–26.

Augier and Shell thus disclose a weight range of film forming material suitable for use in sizing compositions for glass strands used to reinforce organic materials that encompasses the range of about 49 to about 70 weight percent recited in claim 46, rendering the recited range *prima facie* obvious. *Peterson*, 315 F.3d at 1329–30 (“Selecting a narrow range from *within* a somewhat broader range disclosed in a prior art reference is no less obvious than identifying a range that simply *overlaps* a disclosed range. In fact, when, as here, the claimed ranges are completely encompassed by the prior art, the conclusion is even more compelling than in cases of mere overlap.”). On the record before us, Appellant does not argue, much less demonstrate, the criticality of the film former weight range recited in claim 46. *Woodruff*, 919 F.2d at 1578.

Appellant argues that “[a] person of ordinary skill, upon reading the explicit teaching of Augier that the total amount of silanes [included in Augier’s sizing composition] should not exceed 25 % by weight would not arrive at the instantly claimed range of from about 25 to about 40 weight on

a total solids basis.” Appeal Br. 15.

As discussed above, however, Augier discloses that the sizing composition of Augier’s invention comprises an aminosilane by indicating that the composition comprises a silane of the formula  $\text{Si}(\text{R}^1)(\text{R}^2)(\text{R}^3)(\text{R}^4)$  in which  $\text{R}^3$  and  $\text{R}^4$  can be hydrocarbon radicals optionally containing one or more nitrogens. Augier col. 2, ll. 39–52. As also discussed above, the Examiner proposes substituting a functional organo silane coupling agent including a primary amine as disclosed in Schell for the silane coupling agent disclosed in Augier. Augier discloses that the maximum amount of all silanes in Augier’s sizing composition, including silanes of the general formula set forth above and the “other silanes” used as coupling agents—both of which would be aminosilanes in the proposed combination of Augier and Schell—should not exceed 25% by weight of a dry extract of the composition. Augier col. 6, ll. 62–64.

Use of the term “about” in claim 46 to describe the lower limit of the aminosilane weight range indicates that the lower limit can be applied flexibly, allowing for an aminosilane weight percentage of somewhat below 25%. Thus, the range of less than 25% by weight aminosilanes suggested by the combined disclosures of Augier and Schell overlaps the range of about 25 to about 40 weight percent aminosilane recited in claim 46, rendering the recited range *prima facie* obvious. *Peterson*, 315 F.3d at 1329. On the record before us, Appellant does not argue, much less demonstrate, the criticality of the aminosilane weight range recited in claim 46. *Woodruff*, 919 F.2d at 1578.

We, accordingly, sustain the Examiner’s rejection of claims 46 and 47 under 35 U.S.C. § 103(a).

Rejection II: claims 9 and 36 under 35 U.S.C. § 103(a)  
as unpatentable over Augier in view of Schell and Hansen

Appellant argues claims 9 and 36 together. Appeal Br. 17–18. We, accordingly, select independent claim 1 as representative, and decide the appeal as to claims 9 and 36 based on claim 36. 37 C.F.R. § 41.37(c)(1)(iv).

To address claim 36, the Examiner indicates that “Augier in view of Schell is relied upon as set forth above in the rejection of claim 1.” Final Act. 13. The Examiner finds, however, that “said combination does not suggest that the phosphorus containing acid is phosphinic acid,” and the Examiner relies on Hansen for suggesting inclusion of phosphinic acid in a sizing agent composition. *Id.*

Hansen discloses an aqueous binder composition for bonding mineral fibers, such as glass fibers. Hansen ¶¶ 5, 49. Hansen discloses that the composition can be used in applications typical for sizing agents. Hansen ¶ 54. Hansen discloses that the composition comprises a binder component obtainable by reacting at least one alkanolamine with at least one carboxylic anhydride, and at least one hydrolytic stability-improving agent. Hansen ¶¶ 13–15. Hansen discloses that the composition may also include conventional additives such as phosphinic acid. Hansen ¶¶ 40, 41.

Based on these disclosures in Hansen, the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of Appellant’s invention to substitute phosphinic acid as disclosed in Hansen for the phosphonic acid disclosed in Augier, because phosphinic acid and phosphonic acid are both taught to be useful in sizing compositions for coating glass strands. Final Act. 13.

Appellant argues that claims 9 and 36 are patentable over Augier,

Schell, and Hansen for the same reasons that claim 1 is patentable over Augier and Schell (discussed above) because Hansen does not cure the deficiencies of Augier and Schell, and because the “unexpected results described above . . . further support that non-obviousness of claims 9 and 36 over the combination of Augier, Schell, and Hansen.” Appeal Br. 17.

Because Appellant’s arguments for claim 1 do not identify reversible error in the Examiner’s rejection of claim 1 for the reasons discussed above, Appellant’s arguments as to this rejection also do not identify reversible error in the Examiner’s rejection of claims 9 and 36.

Appellant also argues that “a person of ordinary skill would find no teaching, suggestion, or motivation or other rational underpinning from Augier and/or Shell to add the phosphinic acid of Hansen to the composition of the purported Augier/Shell combination.” Appeal Br. 18. Appellant argues that Hansen teaches an aqueous binder composition comprising the water-soluble reaction product of an alkanolamine with a carboxylic anhydride. *Id.* Appellant argues that the alkanolamines are not primary amines, but instead are secondary or tertiary amines, which are not available to associate with phosphinic acid because “they have already been reacted with a carboxylic anhydride.” *Id.*

As discussed above, however, the Examiner’s proposed combination of Hansen with Augier and Shell does not involve adding the binder component of Hansen’s composition, which Hansen discloses is obtainable by reacting at least one alkanolamine with at least one carboxylic anhydride, to the sizing composition of Augier as modified by Shell. Rather, the Examiner proposes substituting the phosphinic acid sizing composition additive disclosed in Hansen for the phosphonic acid included in Augier’s

sizing composition as modified by Schell. Thus, Appellant's assertion that the alkanolamines in Hansen's binder component are not primary amines, and are not available to associate with phosphinic acid, does not address the basis for the Examiner's proposed combination of Hansen with Augier and Schell, and, therefore, does not identify reversible error in the Examiner's rationale for the proposed combination. *Jung*, 637 F.3d at 1365.

We, accordingly, sustain the Examiner's rejection of claims 9 and 36 under 35 U.S.C. § 103(a).

Rejection III: claim 45 under 35 U.S.C. § 103(a) as unpatentable over Augier in view of Schell and Puckett

To address this rejection, Appellant relies on the arguments Appellant presents for claim 1 (discussed above), and argues that the additional reference applied in this rejection (Puckett) fails to cure the deficiencies of Augier and Schell. Appeal Br. 18. Because Appellant's arguments for claim 1 do not identify reversible error in the Examiner's rejection of claim 1 for the reasons discussed above, Appellant's arguments as to this rejection also do not identify reversible error in the Examiner's rejection of claim 45, which we accordingly sustain.

CONCLUSION

Claims	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed
1, 4-8, 11-17, 19-22, 24-35, 37, 39-44, 46, 47	103(a)	Augier, Schell	1, 4-8, 11-17, 19-22, 24-35, 37, 39-44, 46, 47	
9, 36	103(a)	Augier, Schell, Hansen	9, 36	

Appeal 2018-008500  
Application 12/267,963

<b>Claims</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/ Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
45	103(a)	Augier, Schell, Puckett	45	
<b>Overall Outcome</b>			1, 4-9, 11- 14, 16, 17, 19-22, 24- 37, 39-47	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

**AFFIRMED**