

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EWALD DÖRKEN AG,
Petitioner,

v.

SCHAEFFLER TECHNOLOGY AG & CO. KG.,
Patent Owner.

IPR2024-01365
Patent 11,098,756 B2

Before JOSIAH C. COCKS, JAMES J. MAYBERRY, and
JASON W. MELVIN, *Administrative Patent Judges*.

MAYBERRY, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Ewald Dörken AG (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–7 (the “Challenged Claims”) of U.S. Patent No. 11,098,756 B2 (Ex. 1001, the “’756 patent”). Paper 1 (“Pet.”), 1. Schaeffler Technologies AG & Co. KG (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2024) (permitting the Board to institute trial on behalf of the Director). To institute an *inter partes* review, we must determine that the information presented in the Petition shows “a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). For the reasons set forth below, we do not institute an *inter partes* review.

B. *Real Parties-in-Interest*

Petitioner identifies itself as the sole real party-in-interest. Pet. 59. Patent Owner identifies itself and Schaeffler Group USA Inc. as real parties-in-interest, and identifies itself as the assignee of the ’756 patent. Paper 4, 2.

C. *Related Matters*

Neither party identifies any related matters. Pet. 59; Paper 4, 2.

D. *The ’756 Patent*

The ’756 patent, titled “Wheel Bearing Arrangement having a Coating,” issued August 24, 2021. Ex. 1001, codes (54), (45). The ’756 patent ultimately claims priority to German application 10 2017 116 514.2, filed on July 21, 2017. *Id.* at code (30).

The '756 patent “relates to a wheel bearing arrangement for a motor vehicle . . . wherein at least partially a surface coating for improving corrosion protection is formed on the wheel bearing arrangement.”

Ex. 1001, 1:15–22; *see id.* at Fig. 1 (illustrating wheel bearing 1 having wheel hub 2, wheel flange 3, anti-friction bearing 4, and outer ring 5); Fig. 3 (showing surface coating 8 on outer component surfaces 10).

The surface coating is preferably a zinc flake coating composed of “zinc powder, aluminum powder, titanium tetrabutanolate and further constituents.” Ex. 1001, 2:1–5. In two provided examples, the “further constituents” include “butyl titanate monomer and hydrocarbons,” or “trimethoxyvinyl silane and hydrocarbons.” *Id.* at 2:6–12. The preferred thickness of the coating is from 10 to 20 microns. *Id.* at 2:42–44; *see also id.* at 2:60–3:67 (describing a coating method).

E. Challenged Claims

The Petition challenges claims 1–7. Pet. 1. Independent claim 1, which we reproduce below, is representative.

1. A wheel bearing arrangement for a motor vehicle, comprising a wheel hub,
wherein the wheel hub is connected to a wheel flange,
wherein a multi-row anti-friction bearing having an outer ring and an inner ring is arranged on the wheel hub,
wherein the inner ring comprises two bearing inner rings,
wherein an axially outer bearing inner ring is formed in one piece on the wheel hub and
wherein an axially inner bearing inner ring is a separate component which is mounted on the wheel hub and is axially pretensioned by a collar, that acts on an end surface of the inner bearing inner ring, of the wheel hub,

wherein at least partially a surface coating for improving corrosion protection is formed on the wheel bearing arrangement,

wherein the surface coating is formed as a zinc flake coating,

wherein a coating medium used to form the surface coating comprises zinc powder, aluminum powder, titanium tetrabutanolate and further constituents, [and]

wherein the surface coating has a layer thickness of at least 10 μm .

Ex. 1001, 5:6–23.

F. Prior Art and Asserted Grounds

Petitioner asserts that the Challenged Claims are unpatentable based on three grounds:

Claims Challenged	35 U.S.C. §	References/Basis
1–7	103 ¹	Norimatsu '741 ² and Sepeur '835 ³
1–7	103	Kametaka '091 ⁴ and Sepeur '340 ⁵
1–7	103	Yokota '013 ⁶ and Sepeur '794 ⁷

Pet. 13.

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 296–07 (2011), took effect on September 16, 2011. The changes to 35 U.S.C. §§ 102 and 103 in the AIA apply to any patent application with an effective filing date of March 16, 2013 or later. Because the '756 patent has an effective filing date no earlier than July 21, 2017, we refer to the AIA version of the statute.

² US 2005/0254741 A1, pub. Nov. 17, 2005 (Ex. 1002, “Norimatsu '741”).

³ US 2012/0177835 A1, pub. July 12, 2012 (Ex. 1003, “Sepeur '835”).

⁴ US 2009/0148091 A1, pub. June 11, 2009 (Ex. 1006, “Kametaka '091”).

⁵ US 2012/0009340 A1, publ. Jan. 12, 2012 (Ex. 1004, “Sepeur '340”).

⁶ US 2017/0219013 A1, pub. Aug. 3, 2017, having an application filed Jan. 23, 2017 and foreign priority of Jan. 28, 2016 (Ex. 1007, “Yokota '013”).

⁷ US 2010/0175794 A1, pub. Jul. 15, 2010 (Ex. 1005, “Sepeur '794”).

Petitioner also relies on the declaration testimony of Dr. Richard Haber. Ex. 1009; *see also* Ex. 1010 (providing Dr. Haber’s curriculum vitae).

The following subsections provide brief descriptions of the asserted prior art references.

1. *Norimatsu ’741 (Ex. 1002)*

Norimatsu ’741, titled “Bearing Apparatus for a Wheel of Vehicle,” published November 17, 2005. Ex. 1002, codes (43), (54). Norimatsu ’741 is directed to a wheel bearing for a driven wheel of a vehicle that “improves the strength and durability of a wheel hub and an inner ring press-fit on the wheel hub used in the vehicle wheel bearing apparatus.” Ex. 1002 ¶ 2. In addition to describing the structure of the bearing apparatus, Norimatsu ’741 states that “[i]n order to prevent generation of rust by salt present in the environment on a naked part of the inner ring . . . a plated layer of zinc/nickel alloy” is formed on the inner ring. *Id.* ¶ 43.

2. *Sepeur ’835 (Ex. 1003)*

Sepeur ’835, titled “Use of a Coating Agent that Cures at Room Temperature,” published July 12, 2012. Ex. 1003, codes (43), (54). Sepeur ’835 relates to “a room-temperature-curing coating agent for providing cathodic corrosion protection.” *Id.* ¶ 7. Sepeur ’835 discloses that the coating agent includes a “metal pigment . . . selected from the group consisting of zinc, aluminium and magnesium, as well as mixtures and alloys thereof, . . . [with] [z]inc and mixtures or alloys of zinc and aluminium . . . preferred.” *Id.* ¶¶ 18–19.

3. *Sepeur '340 (Ex. 1004)*

Sepeur '340, titled "Method for Producing Deformable Corrosion Protection Layers on Metal Surface," published January 12, 2012. Ex. 1004, codes (43), (54). Sepeur '340 "provide[s] an economical process for cathodic corrosion protection of metal for a broad range of applications." *Id.* ¶ 8. The protective layer is made by "[m]ixing 5 to 95 wt.% metallic magnesium, zinc, aluminium or titanium particles, or mixtures or alloys containing at least one of these metals, in the form of pigments, powders, pastes (flakes) or pellets with 5 to 95 wt.% of at least one metal compound." *Id.* ¶ 10. Sepeur '340 discloses that "[s]urprisingly, . . . a coating with titanium dioxide on zinc/aluminium provides a composite of steel and aluminium with cathodic corrosion protection." *Id.* ¶ 13.

4. *Sepeur '794 (Ex. 1005)*

Sepeur '794, titled "Process for Producing an Active Cathodic Anti-corrosion Coating on Steel Elements," published July 15, 2010. Ex. 1005, codes (43), (54). Sepeur '794 discloses "an anti-corrosion coating" and states that "[s]urprisingly, it was found that special coating compositions consisting of a metal oxide and metal pigment, in particular zinc pigment or zinc pigment and aluminium pigment, protect steel effectively against corrosion even when the layer thickness is in the lower μm range." *Id.* ¶¶ 16, 19.

5. *Kametaka '091 (Ex. 1006)*

Kametaka '091, titled "Wheel Bearing Apparatus," published June 11, 2009. Ex. 1006, codes (43), (54). Kametaka '091 is directed "to a wheel bearing apparatus that can solve the antinomic problems of reducing the weight and size of the bearing apparatus while improving the life of the

bearing apparatus.” *Id.* ¶ 2. In addition to describing the components of its wheel bearing apparatus (*see id.* ¶¶ 51–85), Kametaka ’091 discloses that “insulating coating 30 prevents the premature electric corrosion of the knuckle N caused by combination of different kinds of metals.” *Id.* ¶ 86; *see id.* ¶ 87 (providing “nickel plating or zinc plating” as examples of the insulating coating).

6. *Yokota ’013 (Ex. 1007)*

Yokota ’013, titled “Method of Manufacturing Wheel Bearing Apparatus, and Wheel Bearing Apparatus,” published Aug. 3, 2017. Ex. 1007, codes (43), (54). Yokota ’013 “provide[s] a method of manufacturing a wheel bearing apparatus, and a wheel bearing apparatus . . . [where] corrosion resistance and quality of appearance of a hub spindle can be improved while preventing reduction in quality of clinched portion of the hub spindle.” *Id.* ¶ 10; *see also id.* ¶ 17 (“[W]heel bearing apparatus 1 supports a wheel of, for example, an automobile so that the wheel can rotate with respect to a suspension system of the body of the vehicle.”). Yokota ’013 provides a description and drawings of its wheel bearing (*see id.* ¶¶ 17–27, Figs. 1, 2), and its method for manufacture (*see id.* ¶¶ 28–33, Fig. 3).

II. ANALYSIS OF PETITIONER’S CHALLENGES

A. *Applicable Law*

Petitioner’s asserted grounds of unpatentability are based on obviousness under 35 U.S.C. § 103. With respect to obviousness under 35 U.S.C. § 103,

[a] patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

35 U.S.C. § 103 (2011); *see KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when available, objective evidence, such as commercial success, long felt but unsolved needs, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *see KSR Int'l Co.*, 550 U.S. at 407 (“While the sequence of these questions might be reordered in any particular case, the [Graham] factors continue to define the inquiry that controls.”). The Court in *Graham* explained that these factual inquiries promote “uniformity and definiteness,” for “[w]hat is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context.” *Graham*, 383 U.S. at 18.

The Supreme Court made clear that we apply “an expansive and flexible approach” to the question of obviousness. *KSR Int'l Co.*, 550 U.S. at 415. Whether a patent claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To support this conclusion, however, it is not enough to show merely that the prior art includes separate references covering each

separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness additionally requires that a person of ordinary skill at the time of the invention “would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.*

“[O]bviousness must be determined in light of *all the facts*, and . . . a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine” teachings from multiple references. *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) (emphasis added); *see also PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1196 (Fed. Cir. 2014) (“The presence or absence of a motivation to combine references in an obviousness determination is a pure question of fact.”). As a factfinder, we also must be aware “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *KSR Int’l Co.*, 550 U.S. at 421.

For institution, “[t]he ‘reasonable likelihood’ standard is a somewhat flexible standard that allows the Board room to exercise judgment.” Patent Trial and Appeal Board Consolidated Trial Practice Guide 53 (Nov. 2019), *available at* <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

B. Level of Ordinary Skill in the Art

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Petitioner contends that “[a] person having ordinary skill in the art (‘POSITA’) would have been a person having, as of 21 July 2017: (1) at least an undergraduate degree in engineering and/or

material science, or similar education; and (2) two or more years of experience with coatings.” Pet. 7–8; *see* Ex. 1009 ¶ 25 (providing the same level of ordinary skill).

Patent Owner does not dispute Petitioner’s level of ordinary skill in the art. Prelim. Resp. 5.

We apply Petitioner’s definition of the level of ordinary skill in the art. We determine that this definition is consistent with the prior art of record and the skill reflected in the Specification of the ’756 patent, based on our review of the record.

C. Claim Construction

In *inter partes* reviews, we interpret a claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). Under this standard, we construe the claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.*; *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc) (“We have frequently stated that the words of a claim ‘are generally given their ordinary and customary meaning.’” (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996))).

“Petitioner submits that . . . the claims should be given their plain and ordinary meaning.” Pet. 11. Patent Owner does not propose any specific constructions. *See* Prelim. Resp. 4–5.⁸

We determine that we need not expressly construe any other claim terms to resolve the parties’ disputes on the current record. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms that . . . are in controversy, and only to the extent necessary to resolve the controversy.’” (emphasis added)) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). To the extent that the scope of any other claim term requires discussion, however, we provide it in our assessment of the challenges, which we turn to next.

D. Ground 1: Claims 1–7 over Norimatsu ’741 and Sepeur ’835.

Petitioner provides an overview of Norimatsu ’741 and Sepeur ’835, a claim chart identifying disclosures in the references that Petitioner contends corresponds to the limitations of claims 1–7, and motivations for combining the teachings in the references. Pet. 14–29. Patent Owner provides overarching arguments directed to Ground 1, including that the Petition lacks the requisite specificity and that Dr. Haber’s declaration, and Petitioner’s reliance on the declaration, is deficient. Prelim. Resp. 7–15. Patent Owner also makes arguments directed to the merits of Petitioner’s contentions with respect to how the prior art renders obvious the Challenged

⁸ Petitioner provides arguments concerning the definiteness of the claims. Pet. 8–11. Patent Owner addresses the arguments. Prelim. Resp. 4–5. Because we agree with Petitioner that the claims should be given their plain and ordinary meaning, we do not address these arguments.

Claims. We address these merits-based arguments, as we find them dispositive.

1. Claim 1

a) Zinc flake coating limitation

Independent claim 1 recites, in relevant part, “wherein the surface coating is formed as a zinc flake coating.” Ex. 1001, 5:18–19 (the “zinc flake coating” limitation). For this subject matter, Petitioner cites to paragraphs 18 and 19 of Sepeur ’835. These paragraphs state:

[0018] It is within the scope of the invention that the metal pigment is selected from the group consisting of zinc, aluminium and magnesium, as well as mixtures and alloys thereof.

[0019] Zinc and mixtures or alloys of zinc and aluminium are preferred.

Ex. 1003 ¶¶ 18–19. Petitioner provides no additional discussion on this disclosure, including how it satisfies the zinc flake coating limitation. *See* Pet. 15–17, 20. Petitioner’s sole citation to Dr. Haber’s declaration associated with this claim limitation is to paragraph 35, which provides the same claim chart as is in the Petition. *See* Pet. 17; Ex. 1009 ¶ 35.

Patent Owner argues that the citations in Sepeur ’835 upon which Petitioner relies for the zinc flake coating limitation do not disclose that a zinc flake coating is formed, as required by the claims. Prelim. Resp. 16–17. Patent Owner adds that “Petitioner offers no reasoning or explanation as to how these disclosures within Sepeur-835 amount to a disclosure of zinc flakes.” *Id.* at 17.

We have considered Patent Owner’s argument and determine that it demonstrates a deficiency in Petitioner’s position. We agree with Patent Owner that Petitioner does not explain, sufficient for institution, why the

cited disclosures in Sepeur '835 teach or suggest a zinc flake coating as required by the zinc flake coating limitation.

Accordingly, we determine that the information presented in the Petition does not sufficiently demonstrate for institution that the combination of Norimatsu '741 and Sepeur '835 teaches or suggests the subject matter of the zinc flake coating limitation of claim 1.

b) Constituents limitation

Claim 1 also recites, in relevant part, “wherein a coating medium used to form the surface coating comprises zinc powder, aluminum powder, titanium tetrabutanolate and further constituents.” Ex. 1001, 5:19–22 (the “constituents” limitation). For this subject matter, Petitioner cites to paragraphs 7, 8, 17, 19, and 30 of Sepeur '835. Pet. 20–21. Specifically, Petitioner reproduces the following disclosures from Sepeur '835: “Zinc and mixtures or alloys of zinc and aluminium are preferred” (referencing Ex. 1003 ¶ 19); “coating agent being produced according to the following method: Mixing 5 to 95 wt. % metal alkoxide with 5 to 95 wt. % metal pigment” (referencing Ex. 1003 ¶¶ 7, 8); “A preferred embodiment of the invention consists in that the metal alkoxide is selected from the group consisting of titanium alkoxide, in particular titanium butylate” (referencing Ex. 1003 ¶¶ 17); and “tetra-n-butyl-orthotitanate are stirred into the reaction mixture under an atmosphere of dried nitrogen, the mixture homogenized for 1 h with a slow stirrer and then refluxed for 12 h. The zinc and aluminium particles are surface-modified with the organometal component during this process” (referencing Ex. 1003 ¶¶ 30).

Patent Owner argues that Petitioner “provides no mapping or any other explanation as to what disclosures within [the cited paragraphs in

Sepeur '835] map to the claimed 'further constituents.'" Prelim. Resp. 28–29. We have considered this argument and determine that it demonstrates a deficiency in Petitioner's position.

As seen in the quoted passages above, Petitioner relies on the disclosure of the coating including zinc, aluminum, and a titanium alkoxide, such as titanium tetrabutanolate. Pet. 20–21; *see also* Ex. 1008, 1 (providing that synonyms of titanium tetrabutanolate include titanium butoxide, titanium tetrabutoxide, butyl titanate, and tetrabutyl titanate (referenced at Pet. 16)). The Petition fails to direct us to which additional constituents correspond to the "further constituents," that is, at least two additional constituents in the coating other than zinc, aluminum, and titanium tetrabutanolate.

For the reason above, we determine that the information presented in the Petition does not sufficiently demonstrate for institution that the combination of Norimatsu '741 and Sepeur '835 teaches or suggests the subject matter of the constituents limitation of claim 1.

c) Conclusion, claim 1

For at least the reasons above, we determine that the information presented in the Petition does not show a reasonable likelihood that Petitioner would prevail with respect to its challenge that the combination of Norimatsu '741 and Sepeur '835 teaches or suggests the subject matter of independent claim 1.

2. Claims 2–7

Both parties treat claims 2–7 as depending from independent claim 1. *See* Pet. 10–11 (indicating that claims 3–6 depend from claim 1), 21 (presenting claim 2 in the claim chart for Ground 1); Prelim. Resp. 21

(“Claim 2 depends from independent claim 1.”), 22 (“Claims 3-7 depend from independent claim 1.”).⁹ For at least the reasons above, in connection with our analysis of claim 1 under Ground 1, we determine that the information presented in the Petition does not show a reasonable likelihood that Petitioner would prevail with respect to its challenge that the combination of Norimatsu ’741 and Sepeur ’835 teaches or suggests the subject matter of claims 2–7.

E. Ground 2: Claims 1–7 over Kametaka ’091 and Sepeur ’340.

Petitioner provides an overview of Kametaka ’091 and Sepeur ’340, a claim chart identifying disclosures in the references that Petitioner contends corresponds to the limitations of claims 1–7, and motivations for combining the references. Pet. 29–43. Again, Patent Owner provides overarching arguments directed to Ground 2, including that the Petition lacks the requisite specificity and that Dr. Haber’s declaration, and Petitioner’s reliance on the declaration, is deficient. Prelim. Resp. 23–27. We do not address these overarching arguments, but instead address Patent Owner’s merits-based arguments (Prelim. Resp. 27–32), as we find them dispositive.

1. Claim 1 – Constituents limitation

The constituents limitation of independent claim 1 recites “wherein a coating medium used to form the surface coating comprises zinc powder, aluminum powder, titanium tetrabutanolate and further constituents.”

Ex. 1001, 5:19–22. For this subject matter, Petitioner cites to paragraphs 10,

⁹ Alternatively, claim 3 could be considered an independent claim, as it is directed to a method, rather than an apparatus. The claim can be read, however, to include all of the elements of the apparatus of claim 1.

22, 23, and 49–51 of Sepeur '340. Pet. 20–21. Specifically, Petitioner reproduces the following disclosures from Sepeur '340:

Mixing 5 to 95 wt. % metallic magnesium, zinc, aluminium or titanium particles, or mixtures or alloys containing at least one of these metals, in the form of pigments, powders, pastes (flakes) or pellets with 5 to 95 wt. % of at least one metal compound, wherein a reaction between the metal particles and metal compound(s) results in surface modified metal particles

(referencing Ex. 1004 ¶ 10); “A preferred embodiment of the invention consists in that the metal compound is a metal alkoxide, a metal salt or a mixture of metal alkoxides and/or metal salts” (referencing Ex. 1004 ¶ 22); “In this connection, it is preferable for the metal alkoxide to be selected from the group consisting of titanium alkoxide, especially titanium butylate, titanium propylate or titanium isopropylate, zirconium alkoxide, aluminium alkoxide and tin alkoxide (referencing Ex. 1004 ¶ 23); and “Example 3 describes the application of an anticorrosion coating for press-hardened steel parts. The coating is composed of Al pigment paste and Zn pigment paste dissolved in tetrabutylorthotitanate and applied by a paint spray gun” (referencing Ex. 1004 ¶¶ 49–51).

The Petition’s reliance on Dr. Haber’s declaration is limited to a citation to the same claim chart as appears in the petition. *Compare* Pet. 32– 38, *with* Ex. 1009 ¶ 58 (referenced at Pet. 32). The Petition does not provide any other discussion on how the cited portions of Sepeur '340 teach or suggest the subject matter of the constituents limitation.

Patent Owner argues that “none of [the cited] paragraphs in Sepeur-340 discloses the claimed combination of constituents” in the constituents limitation. Prelim. Resp. 27. First, Patent Owner argues that the constituents limitation requires the surface coating to include zinc

powder, aluminum powder, *and* titanium tetrabutanolate, where Sepeur '340 discloses a coating that includes zinc, aluminum, *or* titanium. *Id.* Patent Owner argues that “at best, [paragraph 10 of Sepeur '340] teaches using *one* of these metals but not the specific combination of zinc, aluminum, *and* titanium particles.” *Id.* at 27–28.

Patent Owner also argues that the Petition “provides no mapping or any other explanation as to what disclosures within [the cited] paragraphs allegedly map to the claimed ‘further constituents.’” Prelim. Resp. 28–29.

We have considered Patent Owner’s arguments and do not agree that the Petition does not sufficiently identify a disclosure in Sepeur '340 that at least suggests using a combination of zinc, aluminum, *and* titanium. Sepeur '340 expressly states, in a disclosure reproduced by Petitioner, that “[m]ixing 5 to 95 wt.% metallic magnesium, zinc, aluminium or titanium particles, *or mixtures or alloys containing at least one of these metals.*” Ex. 1004 ¶ 10. This language at least suggests a mixture of zinc and aluminum particles.

We agree, however, that Petitioner fails to explain, sufficient for institution, which disclosure in Sepeur '340 corresponds to the “further constituents” requirement of the constituents limitation. As seen in the quoted citations from Sepeur '340, above, these disclosures are directed to zinc, aluminum, and titanium tetrabutanolate. The Petition does not identify what chemicals constitute the “further constituents.” Even if we go beyond what is expressly in the Petition and look to Example 3 in paragraphs 49 to 51 of Sepeur '340, to which the Petition cites, at best we identify one

additional identified chemical—butyl glycol.¹⁰ The constituents limitation, however, requires at least *two* further constituents. *See* Ex. 1001, 5:19–22 (providing the constituents limitation, where “further constituents” is plural).

Accordingly, we determine that the information presented in the Petition does not sufficiently demonstrate for institution that the combination of Kametaka ’091 and Sepeur ’340 teaches or suggests the subject matter of the constituents limitation of claim 1, and, consequently, the subject matter of claim 1.

2. *Claims 2–7*

For at least the reasons above discussed in connection with our analysis of claim 1 under Ground 2, we determine that the information presented in the Petition does not show a reasonable likelihood that Petitioner would prevail with respect to its challenge that the combination of Kametaka ’091 and Sepeur ’340 teaches or suggests the subject matter of claims 2–7.

F. Ground 3: Claims 1–7 over Yokota ’013 and Sepeur ’794.

Petitioner provides an overview of Yokota ’013 and Sepeur ’794, a claim chart identifying disclosures in the references that Petitioner contends corresponds to the limitations of claims 1–7, and motivations for combining the references. Pet. 43–58. Similar to Grounds 1 and 2, Patent Owner provides overarching arguments directed to Ground 3, including that the Petition lacks the requisite specificity and that Dr. Haber’s declaration, and

¹⁰ The description in Sepeur ’340 is unclear if butyl glycol is a “constituent” of the coating or is a chemical used to promote the formation of the coating. *See* Ex. 1004 ¶ 49. Regardless, only a single additional chemical is identified.

Petitioner's reliance on the declaration, is deficient. Prelim. Resp. 33–37. We do not address these overarching arguments, but instead address Patent Owner's merits-based arguments (Prelim. Resp. 39–43), as we find them dispositive.

1. Claim 1

a) Zinc flake coating limitation

Independent claim 1 recites, in relevant part, “wherein the surface coating is formed as a zinc flake coating.” Ex. 1001, 5:18–19. For this subject matter, Petitioner cites to paragraphs 32, 33, 50, and 51 of Sepeur '794. Specifically, the Petition reproduces the following disclosures: “the anti-corrosion layer contains between 10 and 100 wt. %, preferably between 50 and 100 wt. % and best of all between 70 and 95 wt. % metallic zinc pigment” (referencing Ex. 1005 ¶ 32); “It is also to advantage in this connection that the anti-corrosion layer contains up to 50 wt. % metallic aluminium pigment” (referencing Ex. 1005 ¶ 33); and “coating is composed of Al pigment paste and Zn pigment paste dissolved in tetrabutylorthotitanate and applied by a paint spray gun” (referencing Ex. 1005 ¶¶ 50, 51). Pet. 48–49.

Petitioner provides no additional discussion on this disclosure or how it satisfies the zinc flake coating limitation. See Pet. 44–45, 48–49. Petitioner's sole citation to Dr. Haber's declaration associated with this claim limitation is to paragraph 78, which provides the same claim chart as is in the Petition. See Pet. 46; Ex. 1009 ¶ 78.

Patent Owner argues that the citations in Sepeur '794 upon which Petitioner relies for the zinc flake coating limitation do not disclose that a zinc flake coating is formed, as required by the claims. Prelim. Resp. 39.

We have considered this argument and determine that it demonstrates a deficiency in Petitioner's position.

As seen from the citations in the Petition, reproduced above, nowhere in these disclosures is a zinc *flake* coating mentioned. And Petitioner does not provide any explanation as to how what is disclosed (a “pigment” or “pigment paste”) would indicate to a person having ordinary skill in the art that this disclosure corresponds to a zinc flake coating.

For the reason above, we determine that the information presented in the Petition does not sufficiently demonstrate for institution that the combination of Yokota '013 and Sepeur '794 teaches or suggests the subject matter of the zinc flake coating limitation of claim 1.

b) Constituents limitation

Claim 1 also recites, in relevant part, “wherein a coating medium used to form the surface coating comprises zinc powder, aluminum powder, titanium tetrabutanolate and further constituents.” Ex. 1001, 5:19–22. For this subject matter, Petitioner cites to paragraphs 34, 50, and 51 of Sepeur '794. Pet. 49. Specifically, Petitioner reproduces the following disclosures from Sepeur '794: “the binder used in the anti-corrosion layer contains 5 to 100 wt. % metal oxides, in particular titanium, aluminium or zirconium oxides” (referencing Ex. 1005 ¶ 34); and Example 1 demonstrates the application of an anticorrosion coating for press-hardened steel parts. The coating is composed of Al pigment paste and Zn pigment paste dissolved in tetrabutylorthotitanate and applied by a paint spray gun” (referencing Ex. 1005 ¶¶ 50, 51).

Petitioner provides no additional discussion on this disclosure or how it satisfies the “powder” and “further constituents” aspects of the

constituents limitation. *See* Pet. 44–45, 49. Petitioner’s sole citation to Dr. Haber’s declaration associated with this claim limitation is to paragraph 78, which provides the same claim chart as the Petition. *See* Pet. 46; Ex. 1009 ¶ 78.

Patent Owner argues that none of the citations to Sepeur ’794 provided in the Petition identifies that the recited coating includes zinc *powder* and aluminum *powder* as required by the constituents limitation. Prelim. Resp. 39. Patent Owner argues that the cited paragraphs mention only pigment paste and that Petitioner does not explain why a paste corresponds to the recited “powder.” *Id.* at 39–40.

Patent Owner also argues that the Petition does not map any disclosure to the recited “further constituents.” Prelim. Resp. 40–41.

We have considered Patent Owner’s arguments and determine that they demonstrate a deficiency in Petitioner’s position. We agree with Patent Owner that Petitioner does not explain sufficient for institution how the citations in the Petition satisfy the requirement that the surface coating include zinc and aluminum *powder*.

We also agree that the information in the Petition does not identify the constituents that correspond to the “further constituents.” As seen from the reproduced language above, one disclosure upon which Petitioner relies mentions titanium, aluminum, *or* zirconium. The other disclosure mentions aluminum, zinc, and tetrabutylorthotitanate. No other constituents of the coating are identified in these disclosures.

Even if we look to the disclosure of Example 1 as a whole, rather than the partial citation to the example provided by Petitioner, we do not discern that the coating includes zinc and aluminum *powder* or “further

constituents.”¹¹ In addition to aluminum pigment paste, zinc pigment paste, and tetrabutylorthotitanate, the example lists two other chemicals: 1-butanol solvent and Byk 348 wetting agent. As to the former, the disclosure appears to indicate that the chemical is used to promote the process, rather than being used as a constituent of the formed coating. As to the later, the name suggests that Byk 348 wetting agent functions as a wetting agent to increase the spreading and penetrating properties of the process liquid, rather than being used as a constituent of the coating. Regardless, without Petitioner citing to and explaining the role these chemicals play in the process, we cannot consider them in our analysis.

For the reason above, we determine that the information presented in the Petition does not sufficiently demonstrate for institution that the combination of Yokota ’013 and Sepeur ’794 teaches or suggests the subject matter of the constituent limitation of claim 1.

c) Conclusion, claim 1

For at least the reasons above, we determine that the information presented in the Petition does not show a reasonable likelihood that Petitioner would prevail with respect to its challenge that the combination of Yokota ’013 and Sepeur ’794 teaches or suggests the subject matter of independent claim 1.

¹¹ We note that Example 3 identifies aluminum oxide powder and zinc powder, which suggests zinc pigment paste and aluminum pigment paste, disclosed in Example 1, are different. *Compare* Ex. 1005 ¶ 50, with *id.* ¶ 60. The Petition does not cite to Example 3 nor does it explain how a paste would have been understood to be a powder.

2. *Claims 2–7*

For at least the reasons above discussed in connection with our analysis of claim 1 under Ground 3, we determine that the information presented in the Petition does not show a reasonable likelihood that Petitioner would prevail with respect to its challenge that the combination of Yokota '013 and Sepeur '794 teaches or suggests the subject matter of claims 2–7.

III. CONCLUSION

Based on the information presented, we determine Petitioner has not established a reasonable likelihood that it would prevail with respect to at least one of the Challenged Claims. Accordingly, we do not institute an *inter partes* review on all challenges.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that an *inter partes* review is not instituted.

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