

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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PIONEER PET PRODUCTS, LLC,  
Petitioner,

v.

OIL-DRI CORPORATION OF AMERICA,  
Patent Owner.

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IPR2022-01138  
Patent 11,026,397 B2

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Before MICHAEL L. WOODS, RICHARD H. MARSCHALL, and  
ALYSSA A. FINAMORE, *Administrative Patent Judges*.

MARSCHALL, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining Some Challenged Claims Unpatentable  
Denying Patent Owner's Revised Motion to Amend  
35 U.S.C. § 318(a)

Pioneer Pet Products, LLC challenges claims 1–19 of U.S. Patent No. 11,026,397 B2 (Ex. 1001, “the ’397 patent”), which is assigned to Oil-Dri Corporation of America. We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 (2022). For the reasons set forth below, we determine that Petitioner has shown that claims 1, 3–8, 10–16, and 18 are unpatentable and that Petitioner has not shown that claims 2, 9, 17, and 19 are unpatentable. We also deny Patent Owner’s Revised Motion to Amend the claims.

## BACKGROUND

### *A. Procedural History*

Pioneer Pet Products, LLC<sup>1</sup> (“Petitioner”), filed a Petition requesting *inter partes* review of the challenged claims. Paper 1 (“Pet.”). Oil-Dri Corporation of America<sup>2</sup> (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). With our authorization, Petitioner filed a Preliminary Reply (Paper 7), and Patent Owner filed a Preliminary Sur-reply (Paper 8). Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review as to all challenged claims and all grounds raised in the Petition. Paper 9 (“Institution Decision” or “Inst. Dec.”).

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<sup>1</sup> Petitioner indicates that it is a real party-in-interest, as well as G.H.L. International, Inc., which “wholly owns Petitioner,” but that “[t]here are no other real parties-in-interest.” Pet. 1.

<sup>2</sup> Patent Owner identifies itself as the only real party-in-interest related to this proceeding. Paper 5 (Patent Owner’s Mandatory Notices), 1.

After institution, Patent Owner filed a Response (Paper 12, “PO Resp.”), Petitioner filed a Reply<sup>3</sup> (Paper 14, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 18, “PO Sur-reply”). Patent Owner filed a Motion to Amend (Paper 13), Petitioner filed an Opposition to that Motion (Paper 15), and Patent Owner filed a related Reply (Paper 19). We provided Preliminary Guidance in response to Patent Owner’s Motion to Amend. Paper 21. Thereafter, Patent Owner filed a Revised Motion to Amend (Paper 24, “RMTA”), Petitioner filed an Opposition to that Motion (Paper 26, “Pet. Opp. RMTA”), Patent Owner filed a related Reply (Paper 27, “PO Reply RMTA”), and Petitioner filed a related Sur-reply (Paper 29, “Pet. Sur-reply RMTA”). An oral hearing in this proceeding was held on October 16, 2023, and a transcript of the hearing is included in the record (Paper 35, “Tr.”). After the oral hearing, we issued an Order authorizing a Supplemental Sur-reply brief from Patent Owner to address claim construction issues and “any allegedly new arguments and evidence Petitioner relies on in connection with its Reply.” Paper 31, 2–3. Patent Owner subsequently filed a Supplemental Sur-reply brief. Paper 32 (“PO Supp. Sur-reply”).

*B. Related Proceedings*

The parties identify the following district court litigation involving the ’397 patent, and note that Petitioner “is not a party” to this litigation: *Oil-Dri Corp. of America v. AMCOL International Corp.*, No. 1:21-cv-00991

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<sup>3</sup> Petitioner’s Reply did not include page numbering; we refer to page numbers in the Reply by assigning our own page numbers to the Reply, with the “Introduction” at page 1. *See* Pet. Reply 1.

(N.D. Ill.). Pet. 1; Paper 5, 1. Patent Owner also identifies IPR2022-01107 as a related matter involving the '397 patent brought by a different petitioner. Paper 5, 1. We also note that IPR2022-00206 and IPR2022-00691 each address the same related patent owned by Patent Owner, U.S. Patent No. 9,439,393 B1 (“the '393 patent”).

*C. The '397 Patent*

The '397 patent relates to “cat litter products” and, in particular, litter products using “[s]welling clay made of sodium bentonite” and various fillers. Ex. 1001, code (57), 1:40–46. The '397 patent states that clumping cat litter products made of sodium bentonite have “the disadvantage of being relatively expensive” (*id.* at 1:40–46), but litter products made of sodium bentonite and fillers retain “substantially the same clumpability properties as a composition consisting of only the sodium bentonite” (*id.* at code (57)). According to the '397 patent, based on a number of test results set forth in the specification, the key to achieving removably clumpable litter compositions involves including a specific amount of sodium bentonite in the litter blend—a minimum of 47% of the total external surface area of all particles in the litter must originate from the sodium bentonite. *See id.* at 45:41–46:2.

The '397 patent provides 46 Examples of various litter compositions having differing weight percentages of sodium bentonite and non-swelling clay used as fillers, different external surface areas of the components of the composition, and different bulk densities. Ex. 1001, 15:46–46:29. The Examples also provide test data showing the clump strength for each composition. *See id.* In the “Examples 3-49” section, the '397 patent

discusses the preparation of the samples and the calculation method used to determine the external surface area for the various reported compositions.

*See id.* at 15:46–16:57.

The '397 patent describes a method for calculating the external surface area of the litter for the components in the litter compositions. The '397 patent states that each blend of litter in the Examples includes “various particle sizes of sodium bentonite and calcium bentonite clay combined at different ratios based on weight.” Ex. 1001, 16:17–20. The particle sizes are “provided by a supplier or screened using a Sweeco vibrating particle separator with appropriate screens.” *Id.* at 16:20–22. To calculate the external surface area, each particle is assumed to be “a perfect sphere.” *Id.* at 16:31–33. Using this assumption and the weights captured per sieve, a particle count is determined using “ASTM Standard Test Method E 1520-99” and “multipliers for 4/6, 6/8, 8/10, 6/10 and <100 mesh particles” that “are extrapolated from a power trendline with the  $R^2=0.9923$  for the plot of the U.S. mesh size versus ASTM multiplier.” *Id.* at 16:34–38. Next, the external surface area of a single particle for each cut is calculated, which is then multiplied by the number of particles in each cut. *See id.* at 16:41–43. These individual cut external surface areas are then added together to get a cumulative external surface area for that component. *See id.* at 16:44–46. The same calculation is then performed for each component present in the mixture. *See id.* Following these individual calculations, the cumulative external surface areas are added together, and each component’s external surface area is divided by the total to get an external surface area percentage. *See id.* at 16:48–50.

*D. Challenged Claims*

Petitioner challenges claims 1–19 of the ’397 patent, of which claims 1 and 7 are independent. Independent claim 1 is reproduced below:

1. A litter comprising:  
45% to 80% by weight of sodium bentonite, **wherein the sodium bentonite comprises at least 47% of an external surface area of the litter** [the “47% surface area limitation”], and  
20% to 55% by weight of a non-clumping filler material,  
wherein the litter has a bulk density less than about 58 lb/ft<sup>3</sup>,  
wherein the litter when exposed to a wetting agent forms at least one clump, and wherein each at least one clump is mechanically separable from unwetted litter for disposal.
7. A litter comprising:  
45% to 80% by weight of sodium bentonite, wherein sodium bentonite comprises at least 47% of an external surface area of the litter, and wherein the litter when exposed to a wetting agent forms at least one clump

Ex. 1001, claims 1, 7 (emphasis and annotation added).

*E. Asserted Grounds of Unpatentability*

Petitioner challenges claims 1–19 on the following grounds (Pet. 2):

| Claims Challenged | 35 U.S.C. § | References/Basis         |
|-------------------|-------------|--------------------------|
| 1, 2, 7–12, 16–19 | 102         | House <sup>4</sup>       |
| 1–19              | 103         | Goss, <sup>5</sup> House |

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<sup>4</sup> US 5,188,064, issued Feb. 23, 1993 (“House,” Ex. 1002).

<sup>5</sup> US 5,975,019, issued Nov. 2, 1999 (“Goss,” Ex. 1003).

Petitioner submits a declaration from Marvin L. Raymond in support of the Petition (Ex. 1004), a second declaration from Mr. Raymond in support of Petitioner's Reply (Ex. 1013), and a third declaration from Mr. Raymond in support of Petitioner's Opposition to Patent Owner's Revised Motion to Amend (Ex. 1051). Patent Owner relies on a declaration of Dr. Clifford T. Johnston in support of its Response (Ex. 2010) and another declaration from Dr. Johnston in support of its Revised Motion to Amend (Ex. 2020).

## ANALYSIS

### *A. Legal Standards*

To prevail in its challenges, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d). "In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burdens of proof in an *inter partes* review).

Petitioner relies on both anticipation and obviousness in its challenges. Pet. 4. To anticipate a claim under 35 U.S.C. § 102, "a single prior art reference must expressly or inherently disclose each claim limitation." *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1334 (Fed.

Cir. 2008). That “single reference must describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art.” *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002).

A claim is unpatentable as obvious under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *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 skill in the art; and (4) where in evidence, so-called secondary considerations, also known as objective indicia of nonobviousness.<sup>6</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

An obviousness analysis must include a reason, based upon some rational underpinning, why a person of ordinary skill would have been motivated to modify the prior art to achieve the claimed invention. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) (“To satisfy its burden of proving obviousness, a petitioner . . . must . . . articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” (citing *KSR*, 550 U.S. at 418)). The requirement of a reason to combine is a safeguard against hindsight bias,

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<sup>6</sup> The parties do not address any objective indicia of nonobviousness in this proceeding.

which is characterized by the “temptation to read into the prior art the teachings of the invention in issue.” *KSR*, 550 U.S. at 421 (quoting *Graham*, 383 U.S. at 36).

*B. The Level of Ordinary Skill in the Art*

The level of ordinary 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). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *Id.*

Petitioner contends that a person having ordinary skill in the art (“PHOSITA”) “would have at least a bachelor of science degree in chemistry, mineralogy, geological science, material science, chemical engineering, or mining engineering with at least two to five years of work experience relating to designing specific chemical mixtures including clay or other minerals, particularly absorbents.” Pet. 34 (citing Ex. 1004 ¶ 38). Patent Owner does not dispute Petitioner’s proposed definition of the level of ordinary skill in the art. *See* PO Resp. 23.

We adopt the definition of the level of ordinary skill in the art proposed by Petitioner because it appears consistent with the record, including the prior art. *See GPAC*, 57 F.3d at 1579.

*C. Claim Construction*

In *inter partes* reviews, the Board interprets claim language using the same claim construction standard used in civil actions under 35 U.S.C. § 282(b), as described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.100(b). Under that standard, we generally give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history. See *Phillips*, 415 F.3d at 1313–14. Although extrinsic evidence, when available, may also be useful when construing claim terms under this standard, extrinsic evidence should be considered in the context of the intrinsic evidence. See *id.* at 1317–19.

Petitioner does not propose a formal construction for any claim terms (see Pet. 33–34), and Patent Owner believes “claim construction is unnecessary to resolve any controversy in this proceeding” (PO Resp. 23). Nevertheless, the parties dispute the scope of the 47% surface area limitation. Patent Owner raises at least an implicit claim construction argument when it contends that the “total ‘external surface area’ is a property coined by the inventors and calculated as described in the ’397 Patent,” the “term does not have an ordinary meaning outside of the [’]397 Patent,” and “[d]etermining total ‘external surface area’ requires specific data.” PO Resp. 6; see also PO Sur-reply 22–24 (arguing in favor of using the multi-step methodology in the ’397 patent to determine whether 47% percent surface area limitation is met); PO Supp. Sur-reply 3–6 (same). Petitioner, on the other hand, argues that “while the claims require certain

‘surface area’ limitations relating to sodium bentonite, the claims do not recite any particular method that is required for measuring the claimed surface area.” Pet. Reply 1. Petitioner contends that any reliable method of approximating surface area can be used and that the ’397 patent’s calculation uses assumptions and approximations, such as an assumption that non-spherical filler materials are spheres, that undermine its meaningfulness. *Id.* at 1–4, 9–12. Despite these arguments, Petitioner contends that the calculations and tests it performs as part of its Reply were “in accordance with” the ’397 patent. *Id.* at 13.

We generally agree with Petitioner that the assumptions and approximations made in the calculations described in the ’397 patent to determine the external surface area of the components of the litter render the computations only a general approximation of the respective surface areas. *See* Pet. Reply 9–12. We need not, however, reach the issue of whether the 47% surface area limitation requires the use of the multi-step method disclosed in the ’397 patent because Petitioner followed that methodology in its arguments and evidence in its Reply. *See* Pet. Reply 13. Importantly, Patent Owner agrees that Petitioner followed the approach set forth in the ’397 patent, and argues that we need not construe “external surface area” to resolve any dispute between the parties. *See* PO Sur-reply 23–24 (arguing that we need not “determine whether ‘total external surface area’ must be determined using the same multi-step approach” in the ’397 patent to resolve the controversy because “the only calculation of external surface area relied on by Petitioner was presented in the Reply and it followed the methodology of the [’]397 Patent”); PO Supp. Sur-reply 2 (same).

Based on our review of the current record, we need not and do not formally construe any claim terms to resolve the patentability issues in this *inter partes* review. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (stating that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). To the extent some implicit claim construction disputes remain, we address those issues in the context of the challenges below.

*D. Obviousness Based on Goss and House*

Petitioner argues that the combination of Goss and House renders claims 1–19 obvious. Pet. 2, 46–61. Patent Owner raises several arguments against this challenge. *See* PO Resp. 34–47. We first provide a brief overview of the prior art, and then address the parties’ arguments.

*1. Overview of Goss*

Goss discloses a “clumping animal litter” containing up to 60% sodium bentonite and a non-swelling clay filler. Ex. 1003, code (57). Patent Owner is the assignee of Goss. *See id.* at code (73). Goss emphasizes the weight percentages of sodium bentonite and filler material as well as the “judicious selection of particle size distribution” of each material. *Id.* at code (57), 4:64–5:33 (particle size analysis of sodium bentonite). Goss also discloses examples containing sodium bentonite and a non-swelling clay in various mean particle size ratios and various particle size distributions. *Id.* at 6:39–65. For each example, Goss discloses a clump strength rating based on a scale of 1 to 5 after conducting a drop test, with 1 indicating a clump

that remained substantially intact after the test. *Id.* at 6:6–38. Several test results show a successful clump strength of 1 or 1.3 at 30 seconds and 24 hours after wetting the litter. *See id.*

Goss discloses 17 sample litter compositions comprised of a clay filler and sodium bentonite. Ex. 1003, 6:44–64. Each litter uses a different composition of a “particulate non-swelling clay material and swelling clay.” *Id.* at 3:10–11. Goss discloses that the particulate non-swelling clay filler materials can include “any of the commonly known clays” and states that these are “frequently referred to in the trade under designations as Mississippi Grey, Mississippi Tan, Blue Mountain, and Georgia White.” *Id.* at 3:38–39, 4:1–3. Goss further discloses that the “clay constituent of the present compositions is in the form of discrete particles” and “[t]hese particles preferably are rounded in shape.” *Id.* at 4:5–8. The clays in the reported Goss examples “were run through a particle sizing table using screen sizes from 6 mesh to 100 mesh, United States Sieve Series.” *Id.* at 4:13–15. As to the sodium bentonite components, Goss discloses that “[a]n example of a well known swelling clay is sodium bentonite, also called Wyoming bentonite.” *Id.* at 4:50–51. Goss discloses that “[t]he sodium bentonite material used in the embodiments of the present invention was subjected to particle size analyses.” *Id.* at 4:64–66. For each of the samples disclosed, Goss discloses the particle size analysis using sieves of various sizes. *See id.* at 4:11–40, Table I. The analysis includes the sieve analysis of the components, the mean particle size, the ratio of particle sizes, the weight percentage of the components, and the clump strength for the samples. *See id.* at 2:58–63, 4:11–40, 4:64–5:33, 6:39–65, Tables I–III.

## 2. *Overview of House*

House relates to a clumping cat litter comprising certain mixtures of clay and cellulose materials within certain ranges of “bulk densit[ies].” Ex. 1002, code (57), 3:3–10. House states that it seeks “to provide a clumping sorbent having superior sorption capacity and sufficient cohesiveness when wetted with an aqueous liquid, such as urine, to be easily separated from the nonwetted sorbent particles.” *Id.* at 2:66–3:2. According to House, its invention provides a sorbent that, “when wetted with urine forms a mass of sorbed, wetted sorbent that can be scooped out or otherwise removed from the litter box.” *Id.* at 6:43–46. House discloses using between 5% and 70% “cellulosic material” in its litter mixture. *Id.* at 4:54–5:13, 8:1–9. House discloses that the remainder of the mixture is made of “smectic clays which exhibit osmotic swelling . . . when contacted with water, or like aqueous liquid such as urine” and that “the most particularly preferred” smectic clays are “Wyoming bentonite or western bentonite.” *Id.* at 4:20–32. House further discloses that the bulk densities of the disclosed sorbents are “in the range of from about 0.54 g/cc to about 0.96 g/cc, preferably from about 0.60 g/cc to about 0.90 g/cc, and most preferably from about 0.66 g/cc to about 0.90 g/cc.” *Id.* at 7:3–15; *see also id.* at code (57), 3:3–10.

## 3. *Motivation to Combine and its Impact on Petitioner’s Challenge to Dependent Claims 2, 9, 17, and 19*

For its challenge based on Goss and House, Petitioner contends that Goss discloses every limitation in independent claims 1 and 7, and that House also discloses the limitations requiring “45% to 80% by weight of sodium bentonite,” “wherein the litter has a bulk density less than about 58

lb/ft<sup>3</sup>,” “when exposed to a wetting agent forms at least clump,” and a clump “mechanically separable from unwetted litter for disposal.” *See* Pet. 46–50, 53–55. Petitioner also relies on Goss for limitations in dependent claims 3–6, 8, 10–16, and 18, with House only relied on for teaching certain claim limitations as an additional reason why the combination satisfies the limitation in question. *See* Pet. 51–61 (relying on Goss alone for limitations in dependent claims 3–6 and 13–15, and Goss and House as both disclosing the limitations in claims 8, 10–12, 16, and 18).<sup>7</sup> Petitioner relies on House alone for the limitations in dependent claims 2, 9, and 17 requiring a litter “bulk density less than about 47 lb/ft<sup>3</sup>” and dependent claim 19 requiring “a fragrance.” *Id.* As to motivation to combine, Petitioner asserts that a “PHOSITA would understand that there is a rational underpinning to combine the teachings of Goss and House as required under patent law because both are related to cat litter having similar characteristics.” *Id.* at 46.

In our Institution Decision, we noted that “Petitioner provides very little argument or evidence in support of its motivation to combine argument in the Petition” and that “Petitioner does not explain why a ‘PHOSITA would understand that there is a rational underpinning to combine’ Goss and House or cite to any declarant support for its argument.” Inst. Dec. 17

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<sup>7</sup> In some cases, the body of Petitioner’s argument only relies on Goss, but the chart summarizing the challenge includes a citation to House, and we view the challenge to these claims as relying at least in part on House. *See* Pet. 49–52, 60 (relying on Goss alone for claims 10–12 and 18 in the body of the argument but including citations to House for those same claims in a summary chart).

(citing Pet. 46). We also noted that “[e]ven if Petitioner fails to establish adequately a motivation to combine the references, that does not end our analysis” because a “patent can be obvious in light of a single prior art reference” such as Goss. *Id.* at 18. We also stated that, for at least independent claims 1 and 7, Petitioner only relies on House “as an additional reason why the references disclose a limitation in question.” *Id.* (citing Pet. 46–61).

In its Response, Patent Owner argues that “the Petition fails to sufficiently or precisely identify the differences between the prior art and claims, and fails to identify the specific prior art teachings upon which Petitioner relies, therefore, preventing proper evaluation of this asserted of unpatentability.” PO Resp. 41–42. Patent Owner also asserts that the Petition fails to articulate a sufficient rationale for combining House and Goss and, especially with respect to the Petition’s exclusive reliance on House for the limitations in dependent claims 2, 9, and 17. *Id.* at 42–46; *see also* PO Sur-reply 17–21 (addressing motivation to combine issue).

Petitioner replies that Goss and House both disclose clumping litter products including sodium bentonite and a filler, with Goss using calcium bentonite as a filler and House using cellulosic filler material. Pet. Reply 25. Petitioner asserts that “[g]iven that these cat litter products are mixtures, and not based on chemical reactions, a PHOSITA would know that the various filler materials can be substituted one for another to create clumping cat litters having superior characteristics, including improved sorption and reduced bulk density.” *Id.* (citing Ex. 1013 ¶ 7).

In its Sur-reply, Patent Owner argues that Petitioner’s “Reply contains an entirely new section addressing reason to combine as does its expert’s second declaration” in an improper attempt to fix the deficiencies in the Petition. PO Sur-reply 12 (citing Pet. Reply 25; Ex. 1013 ¶ 7; Ex. 2019, 44:2–9). Patent Owner contends that “[t]his new evidence should be disregarded as it is outside the proper scope of a reply.” *Id.* Patent Owner also addresses our statement in the Institution Decision that the “Petition sets forth an analysis based on Goss alone for at least claims 1 and 7.” *Id.* at 15 (quoting Inst. Dec. 19). According to Patent Owner, neither of Petitioner’s challenges relies on Goss alone, and we only instituted on the grounds in the Petition, which does not include a ground based on Goss alone. *See id.* at 15–16 (citing Inst. Dec. 22; Ex. 2019, 6:10–7:14).

We first address the motivation to combine issue. Based on our review of the record, we find that Petitioner fails to articulate an adequate rationale for the combination of Goss and House. The Petition contains only a single sentence addressing the issue, without any citation to record evidence or declaration support. *See* Pet. 46. In addition, the assertion merely states the conclusion that a “PHOSITA would understand that there is a rational underpinning to combine the teachings of Goss and House as required under patent law because both are related to cat litter having similar characteristics.” *Id.* This assertion, at most, addresses the fact that Goss and House are in the same field or that they are analogous art, but does not explain *why* a PHOSITA would have been motivated to combine Goss and House. *See id.* In addition, the Petition lacks sufficient explanation of *how* Petitioner proposes to combine Goss and House. *See* Pet. 46–53. Instead,

when Petitioner relies on House in this challenge, it appears to be a back-up argument in the event that we find Goss fails to disclose the limitation. Merely stating that Goss and House both disclose a limitation does not explain which aspects of House Petitioner proposes adding to Goss or what the resulting litter composition would look like. *See id.*

The details of the resulting litter based on the combination of Goss and House matter here because it could impact whether all limitations of a given claim are satisfied by the combination. For example, Petitioner relies exclusively on specific examples from Goss for the 47% surface area limitation, but adding some aspects of House's litter components to meet other limitations could undermine Petitioner's reliance on Goss's specific examples. The failure of the Petition to set forth a specific combination elides these issues. *See* Pet. 46–51.

Petitioner's Reply arguably addresses some of these concerns by providing a more fulsome motivation section, backed by new expert testimony, and specific litter examples based on Goss and various cellulose filler materials allegedly disclosed by House. *See* Pet. Reply 24–25 (citing Ex. 1013 ¶ 7); *see also* PO Sur-reply 18–22 (arguing that Petitioner's Reply still fails to articulate an adequate motivation to combine). This analysis goes far beyond the limited analysis in the Petition, and Petitioner provides no reason why it could not have been included in the Petition. *See* Pet. Reply 24–25.

As noted below, in some situations petitioners should be afforded the opportunity to go beyond the arguments in a petition when addressing a new claim construction or other new argument raised by a patent owner or an

institution decision, but that analysis does not apply here. *See, e.g., Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1383–84 (Fed. Cir. 2023) (allowing new arguments in reply based on new claim construction proposed by patent owner). Patent Owner here argues that the multi-step methodology set forth in the '397 patent must be used to calculate the external surface area in the 47% surface area limitation (*see, e.g.,* PO Sur-reply 22–24), but Petitioner does not rely on a combination of Goss and House to teach that limitation, and instead relies only on Goss (*see* Pet. 47–48). In addition, the Petition's failure to articulate a rationale for combining Goss and House or the specifics of that proposed combination does not depend on any claim construction issue. Given that the Petition includes no meaningful analysis of the motivation to combine issue and no expert support, we view the additional reasoning and reliance on new expert testimony, coupled with new specifics as to the manner in which the references would be combined, as sufficiently new and different that we should not consider these arguments and evidence in the Reply. *See Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1286–87 (Fed. Cir. 2017) (“Rather than explaining how its original petition was correct, [petitioner's] subsequent arguments amount to an entirely new theory of *prima facie* obviousness absent from the petition. Shifting arguments in this fashion is foreclosed by statute, our precedent, and Board guidelines.”). Without any basis to combine Goss and House, Petitioner cannot rely on that combination for this challenge.

We next address the impact of Petitioner's inability to rely on a combination of Goss and House. As noted in our Institution Decision, the

failure of the Petition to include an adequate reason to combine does not necessarily mean that Petitioner cannot rely on Goss alone where unpatentability may be established without the need to rely on House for any limitations in the claims. *See* Inst. Dec. 18. We continue to hold that view. Here, the Petition makes clear that Petitioner relies on Goss for all of the limitations of claims 1, 3–8, 10–16, and 18. *See* Pet. 46–61. While Petitioner asserts that House discloses several limitations of these same claims, the Petition does not treat House as necessary to the combination or that only the combination of Goss and House satisfies one or more of the limitations of these claims. *See id.* Instead, the Petition treats House as a kind of back-up argument in the event that we found that Goss fails to disclose a limitation in question. *See id.* As such, Patent Owner was on notice that Petitioner asserts that Goss discloses all of the limitations of claims 1, 3–8, 10–16, and 18 and had an opportunity to argue that Goss fails to disclose any limitations in those claims, and Patent Owner did so. *See* PO Resp. 25–26, 34–40.

Patent Owner argues in its Sur-reply that the claims cannot be found unpatentable based on Goss alone because Petitioner did not frame its challenge as based on Goss alone. *See* PO Sur-reply 15–16. We disagree for two reasons. First, Patent Owner did not make this argument in its Response, depriving Petitioner of an opportunity to respond to it in its Reply. We generally refuse to consider such belated arguments and find that approach especially appropriate where the Institution Decision explicitly raises the issue and Patent Owner could have addressed the issue squarely in its Response. *See* Paper 10, 9 (“Patent Owner is cautioned that any

arguments not raised in the response may be deemed waived.”); Inst. Dec. 18. We find that Patent Owner forfeited this argument by failing to make it in its Response.

Second, even if we consider Patent Owner’s argument, Patent Owner fails to persuade us that it was not on notice that Petitioner relies on Goss for every limitation of claims 1, 3–8, 10–16, and 18 or that we cannot view a challenge based on a combination of two references as based on a single reference in appropriate circumstances. *See* PO Sur-reply 15–16. Patent Owner cites *Magnum Oil* for the proposition that we must base our decision on the grounds raised in the Petition and cannot adopt arguments on behalf of Petitioner that were not made in the Petition, but, as noted above, we view the Petition as including sufficient arguments based on Goss alone to establish unpatentability without reliance on House. *See* PO Sur-reply 15–16 (citing *Magnum Oil*, 829 F.3d 1364). As such, we are not making any arguments on behalf of Petitioner to support its allegations based on Goss.

In addition, Patent Owner does not contest our assertion that a single reference such as Goss may support an unpatentability determination based on obviousness. *See* Inst. Dec. 18 (citing *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016); *Game & Tech. Co. v. Activision Blizzard Inc.*, 926 F.3d 1370, 1381 (Fed. Cir. 2019)). Although the Petition’s treatment of Goss alone may be viewed as a single reference obviousness or an anticipation challenge, we do not see the distinction as relevant given that, for the reasons discussed below, we find that Goss discloses all of the limitations of the claims in question in a manner that would meet the anticipation standard. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373

(Fed. Cir. 2019) (“While [patent owner] argues that the use of O’Brien as a single anticipatory reference would have been more properly raised under § 102, it is well settled that ‘a disclosure that anticipates under § 102 also renders the claim invalid under § 103, for anticipation is the epitome of obviousness.’” (internal quotation marks omitted) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983))). In *Realtime Data*, the Federal Circuit held that the Board did not violate any notice requirement to the patent owner in concluding that a single reference rendered the challenged claims obvious, even though the petition framed the issue as one of obviousness based on a combination of references. *See id.* The Federal Circuit reasoned that finding the claims invalid based on a single reference made sense, given that the petitioner argued that the prior art reference in question disclosed every element of the claim in question. *See id.* We see no reason why taking a similar approach here with respect to Petitioner’s treatment of Goss deprives Patent Owner of any notice, and Patent Owner does not provide any authority to the contrary. *See* PO Sur-reply 15–16.

Based on the foregoing, we find that Petitioner fails to establish a proper motivation to combine Goss and House, but that this failure does not deprive us from considering whether Goss alone renders claims 1, 3–8, 10–16, and 18 unpatentable as obvious. The same cannot be said for Petitioner’s treatment of dependent claims 2, 9, 17, and 19, which relies exclusively on House for the limitations of those claims. *See* Pet. 51, 53, 55, 60–61. For those claims, the failure to articulate and support an adequate basis to combine Goss and House means that Petitioner fails to establish that

any of claims 2, 9, 17, or 19 are unpatentable as obvious over Goss and House.

*4. Independent Claims 1 and 7*

Petitioner argues that claims 1 and 7 would have been obvious over Goss and House and that Goss discloses every limitation of these claims. *See* Pet. 46–50, 53–55. For each limitation in claims 1 and 7, Petitioner points to specific portions of the references that support its position. *See id.* Petitioner also relies on the testimony of Mr. Raymond. *See id.* (citing Ex. 1004).

Patent Owner argues that Petitioner fails to establish that Goss or House discloses the 47% surface area limitation. PO Resp. 25–26, 34–40. Patent Owner does not argue that Goss fails to disclose any other limitation of these claims. *See id.* We first address the dispute over the 47% surface area limitation and then address the remaining limitations.

*a. 47% Surface Area Limitation*

*i. The Parties’ Positions*

As to the 47% surface area limitation, Petitioner relies specifically on Goss Samples<sup>8</sup> G and H in the Petition and their alleged similarity to the example compositions disclosed in the ’397 patent that meet the 47% surface area limitation. Pet. 47–48. For example, Petitioner notes that Example 6 from the ’397 patent has a “50% sodium bentonite to 50% calcium bentonite

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<sup>8</sup> Petitioner refers to Goss’s Samples as “Examples,” but Goss refers to them as “Samples.” We will follow Goss’s nomenclature here. *See* Pet. 47–48; Ex. 1003, 2:58–59, 4:66, 5:47, 6:5, Table III (referring to “Sample Set” “G”).

weight ratio, with a calcium bentonite particle size of 905 microns and a sodium bentonite particle size of 484 microns and [a sodium bentonite] Surface Area of 54%” and that this example has a positive clump strength of 1.0 at two time periods. *Id.* at 47. Petitioner argues that Samples G and H from Goss have the “same weight ratio of sodium bentonite to clay and very similar particle sizes” as Example 6 from the ’397 patent and that Samples G and H in Goss also demonstrate similar clump test results. *Id.* at 47–48 (citing Ex. 1004 ¶ 81). Petitioner also argues that the sodium bentonite and non-swelling clay in Example 6 of the ’397 patent “appear to be virtually identical to the materials used in the Goss patent examples.” *Id.* at 47–48 n.37 (citing Ex. 1001, 15:48–51; Ex. 1003, 4:11–13, 4:64–5:4, 6:43–65). Petitioner contends that because the “material, particle sizes and weight ratios” are so similar between the ’397 patent and Goss, the resulting external surface areas that are derived from these properties would meet this limitation. *Id.* at 48 (citing Ex. 1004 ¶ 81). Petitioner also relies on a chart summarizing Goss Samples G and H and related bulk density and particle size data. *See* Pet.48; Ex. 1010.<sup>9</sup>

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<sup>9</sup> Petitioner contends that it mistakenly cited to Ex. 1011 (Hughes) rather than Exhibit 1010 at several places in the Petition. *See* Paper 7, 1–2 (citing Pet. 54, 58). We agree with Petitioner that the citation to Exhibit 1011 rather than Exhibit 1010 constitutes a readily apparent typographical error, and we consider Exhibit 1010 in our analysis of the Petition. The parties dispute the import of Exhibit 1010, but because Petitioner follows the methodology of the ’397 patent in its Reply and does not appear to maintain reliance on the calculations in Exhibit 1010, we do not consider the merits of the calculations made in Exhibit 1010 and the apparent attempt by Petitioner to show that the 47% surface area limitation was met using a broader claim construction than Patent Owner proposes and Petitioner uses in its Reply.

Patent Owner argues that determining whether the 47% surface area limitation is met requires a calculation consistent with the multi-step methodology in the '397 patent, and Petitioner fails to provide any calculation of surface area percentage. PO Resp. 6–10, 25–26. Patent Owner contends that Petitioner's analysis lacks support because none of the prior art references expressly disclose the total surface area of sodium bentonite and that Petitioner's reliance on the similarities between "the materials, particle sizes and weight ratios" of Goss's Samples and the '397 patent fails to establish the surface area of the sodium bentonite. *Id.* at 35–36 (citing Pet. 48). Patent Owner also argues that Petitioner mistakenly uses data from Goss's Sample Q when alleging that Goss's Sample H supports its position, and that the particle size data from Sample H does not support Petitioner's argument that Goss's Sample H uses particle sizes that are similar to the particle sizes used in the '397 patent's Example 6. *See id.* at 36 (citing Pet. 47–48; Ex. 2010 ¶ 104). According to Patent Owner, Petitioner also uses improper *mean* particle size data in Goss that does not align with the calculation method discussed in the '397 patent, which "requires particle size *distribution* data." *Id.* (emphasis added) (citing Ex. 2009, 37:2–5; Ex. 2010 ¶¶ 105–112). Patent Owner further contends that Petitioner's reliance on the similarity between Goss Samples G and H and Example 6 of the '397 patent invokes improper hindsight. *Id.* at 36–37 (citing Pet. 47–48).

Patent Owner further argues that Petitioner fails to provide any specific surface area value and makes unsupported assumptions based on the weight percent of sodium bentonite and comparisons with the '397 patent.

*Id.* at 37–39 (citing Pet. 47–48, 54; Ex. 2010 ¶¶ 106–116). Patent Owner further asserts that Mr. Raymond admitted (1) that to calculate surface area, weight percent, particle size, and bulk density must be known; (2) that particle size data in Goss and particle size distribution data are not the same; and (3) that the bulk density data in the Petition is not based on any “technical document.” *Id.* at 39–40 (citing Pet. 47–48, 54; Ex. 1004 ¶¶ 80–83; Ex. 2009, 29:6–15, 34:4–11, 37:2–15).

In its Reply, Petitioner argues that Patent Owner unfairly criticizes the analysis in the Petition based on Mr. Raymond’s interpretations and conclusions. Pet. Reply 13. Petitioner contends that “[i]n order to confirm the prior conclusions and perceptions and to respond to Patent Owner’s criticisms of those conclusions and perceptions, Petitioner and its expert have conducted calculations and performed tests in accordance with the prior art and the [’]397 Patent.” *Id.* According to Petitioner, “[t]hese calculations and tests confirm Petitioner’s and its expert’s stated expectations that prior art teachings inherently disclose the 47% surface area limitations.” *Id.* (citing Ex. 1004 ¶¶ 55, 81, 82).

As to Goss, Petitioner notes that Patent Owner owns Goss, Goss himself is an inventor on the ’397 patent, and Dr. Johnston submitted an expert report (Ex. 1017) in litigation where Patent Owner asserted Goss (the “Goss litigation”). Pet. Reply 13. Petitioner contends that Dr. Johnston’s expert report provided bulk density ranges for the litter components in Goss, and that given Goss’s disclosure of particle sizes and weight percentages, Patent Owner could have calculated the external surface area of sodium bentonite in Goss but fails to provide any calculations to rebut Petitioner’s

showing. *See id.* at 13–14. Petitioner then uses the bulk density ranges used by Dr. Johnston in the Goss litigation and, following the methodology used in the '397 patent, concludes that several of the samples in Goss easily meet the 47% surface area limitation. *Id.* at 14–15 (citing Ex. 1013 ¶ 79; Ex. 1016; Ex. 1017 ¶ 16). Petitioner asserts that the bulk density ranges Dr. Johnston provides are consistent with Mr. Raymond's experience. *Id.* (citing Ex. 1013 ¶ 79). According to Petitioner's calculations, many of the Goss samples exceed the 47% level required by the limitation, with Sample G having an external surface area of sodium bentonite in the range of 61.79% to 66.01% based on the range of bulk densities in Dr. Johnston's report. *Id.* at 15–16 (citing Ex. 1016).<sup>10</sup>

In its Sur-reply, Patent Owner argues that “[i]n its Reply, Petitioner improperly injected new evidence, new issues, and new expert testimony that should have been provided in the Petition.” PO Sur-reply 2. Patent Owner contends that Petitioner's new evidence and arguments “should have been included in the Petition but it was not, thereby precluding Patent Owner from properly responding to this new evidence.” *Id.* at 4; *see also id.* at 6–8 (arguing that Petitioner's Reply as to Goss and House includes new arguments and evidence). Patent Owner also argues that the calculations related to Goss's Samples “exceed the scope of a permissible reply

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<sup>10</sup> Petitioner also provides test data related to litters based on a combination of Goss and House. *See* Pet. 24. Because we already determined that Petitioner did not provide an adequate basis for the combination of Goss and House, we do not address these aspects of the Reply or Patent Owner's arguments that the test data goes beyond the scope of a proper Reply. *See* PO Sur-reply 1–12.

argument” and that Petitioner improperly relies on Dr. Johnston’s “expert declaration from an unrelated litigation for ranges of bulk density values” for Goss’s litter components, which Petitioner could have cited in the Petition. *Id.* at 8–9 (citing Pet. Reply 15–16; Ex. 1013 ¶¶ 25, 80). Patent Owner also faults Petitioner for basing some of its calculations on bulk density values for raw materials determined by Mr. Raymond’s testing of those materials. *Id.* at 9–10 (citing Ex. 1013 ¶ 13; Ex. 1019).

As to the merits, Patent Owner faults Petitioner’s reliance on the bulk density figures in Dr. Johnston’s expert report in the Goss litigation because those ranges “are based on materials ‘delivered in the plant’” and that Mr. Raymond speculated as to what that “meant” and confirmed that “bulk density values depend on processing and moisture content.” *Id.* at 17 (citing Ex. 2019, 54:23–55:21, 55:23–56:16).<sup>11</sup> Based on this testimony, Patent Owner asserts that Petitioner fails to prove “that the specific materials used in the Goss samples have the same bulk density values, which renders the external surface area calculations unreliable.” *Id.*

*ii. Discussion*

We first address whether Petitioner’s arguments in the Reply go beyond the proper scope of a reply and whether we can rely on any of the allegedly new calculations and test data Petitioner provides with its Reply. Patent Owner devotes much of its Sur-reply to pointing out where

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<sup>11</sup> Patent Owner also notes that it “objected to” Dr. Johnston’s expert report from the Goss litigation (Ex. 1017). PO Sur-reply 17. Patent Owner has not moved to exclude the exhibit or raised any evidentiary concerns, and we do not give Patent Owner’s objection any weight in our analysis.

Petitioner's Reply goes too far in its reliance on new arguments and evidence, and many of these arguments have merit. For example, Petitioner relies on new aspects of House and combines them with aspects of Goss, then conducts tests on the resulting litters not alluded to in the Petition. *See* Pet. Reply 20–22, 24. Because we already determined that Petitioner fails to provide an adequate motivation to combine and that we do not consider Petitioner's arguments based on a combination of Goss and House, we need not address Patent Owner's specific arguments as to these aspects of the Reply. We also need not decide whether Petitioner's reliance on new samples in Goss or the confusion over whether Petitioner intended to rely on Goss's Sample H or Q in the Petition. *See* PO Resp. 36.<sup>12</sup> Instead, we focus on Petitioner's reliance on Goss Sample G in the Petition, and the related calculations as to Sample G in the Reply. *See* Pet. 47–48; Pet. Reply 13–16. We find that Petitioner's arguments and evidence in its Reply, at least as it pertains to its analysis of Goss's Sample G, do not exceed the proper scope of a reply because they are consistent with the reliance on Sample G in the Petition and responsive to arguments made by Patent Owner in its Response, including Patent Owner's assertion that the surface area calculation must follow the methodology outlined in the '397 patent. *See* PO Resp. 6–10, 25–26, 36 (“Petitioner relies on data that is *not* used in the calculation of external surface area as disclosed in the '397 Patent.”).

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<sup>12</sup> Even if we considered these additional Goss samples and Petitioner's allegedly new argument and evidence, it would not change our ultimate patentability determinations for any of the claims challenged in this proceeding because we ultimately find that Goss's Sample G discloses the limitations of the challenged claims that rely on Goss.

Although Patent Owner does not specifically address the aspect of Petitioner's Reply related to Goss's Sample G, Patent Owner seems to argue that all of the calculations Petitioner provides with its Reply, including those related to Sample G, are improper. *See* PO Sur-reply 8–9. To the extent Patent Owner argues that Petitioner cannot rely on calculations of external surface area fo`r Goss Sample G using the methodology set out in the '397 patent, we disagree. In *Axonics*, the Federal Circuit held that “where a patent owner in an IPR first proposes a claim construction in a patent owner response, a petitioner must be given the opportunity in its reply to argue and present evidence of anticipation or obviousness under the new construction, at least where it relies on the same embodiments for each invalidity ground as were relied on in the petition.” *Axonics*, 75 F.4th at 1384. Here, Petitioner's Reply relies on the same embodiments (Sample G) of the same prior art (Goss) as it relies on in its Petition when addressing Patent Owner's construction of the 47% surface area limitation. *See* Pet. 47–48; Pet. Reply 16.<sup>13</sup> Patent Owner appears to acknowledge that Petitioner's Reply seeks to address Patent Owner's claim construction argument that was not addressed in the Petition. *See* PO Sur-reply 8–9. Following the logic and holding of *Axonics*, we determine that Petitioner must be given an opportunity in its Reply to address Goss's Sample G using the methodology

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<sup>13</sup> Although Patent Owner made some similar arguments as to the scope of the 47% surface area limitation in its Preliminary Response, and therefore Patent Owner's claim construction arguments in its Response may not have been entirely “new” in that sense, Petitioner's Reply remains the first and only time that Petitioner could address this new construction. *See* Prelim. Resp. 10–11, 31.

set forth in the '397 patent (i.e., Patent Owner's proposed construction for the 47% surface area limitation), including reliance on new declarant testimony and the calculations related to Goss's Sample G in the Reply.<sup>14</sup>

This approach makes sense here given the consistency between the reliance on Goss's Sample G in the Petition and Reply, but this approach may not make sense where a reply strays too far from the theories and evidence set forth in a petition. For example, in an *inter partes* review between the same parties involving the related '393 patent that includes the same 47% surface area limitation, we did not view the evidence and arguments in the Petition and Reply as consistent enough to consider the new arguments and evidence in the Reply. *See* IPR2022-00691 (the "-691 IPR," Paper 31). Unlike the challenged claims in this proceeding, the claim at issue in the -691 IPR also required a "cellulose-containing" filler material. *Id.* at 4. The Petition in the -691 IPR lacked any particle size data for the filler that would allow the calculation of external surface area using any methodology, and the Reply relied on cellulose containing fillers and related data that the Petition did not reference in connection with the 47% surface area limitation. *See id.* at 19–29. Here, by contrast, the Petition provides the particle size, weight percent, and bulk density data necessary to calculate a

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<sup>14</sup> We note that any prejudice to Patent Owner by allowing Petitioner to rely on this aspect of its Reply was minimized by allowing Patent Owner to file a Supplemental Sur-reply brief and declaration addressing any allegedly new material in Petitioner's Reply. *See* Paper 31, 2–3. Patent Owner's Supplemental Sur-reply addresses the construction of the 47% surface area limitation, but does not rely on a declaration or address Petitioner's calculations in its Reply. *See* Paper 32.

surface area percent, at least under Petitioner's preferred broader approach where any method may be used, and the Reply relies on the same aspect of Goss (Sample G) as the Petition to support its argument as to the 47% surface area limitation. *See* Pet. 47–50.

Turning to the merits, we find that Petitioner proves that Goss discloses the 47% surface area limitation using the approach set forth in the '397 patent. As noted above, Petitioner relies on Goss's Sample G, which uses a 50% sodium bentonite to 50% calcium bentonite weight ratio, has particle sizes of 480 microns for sodium bentonite and 850 microns for calcium bentonite, and provides a removably clumpable litter based on the clump test results in Goss. Pet. 47–48 (citing Ex. 1003, Sample G; Ex. 1004 ¶ 81). Petitioner asserts that Goss's Sample G would meet the 47% surface area limitation based in part on the very close similarity to Example 6 in the '397 patent that uses the same weight ratio of sodium bentonite to calcium bentonite, very similar particle sizes for the litter components, and sodium bentonite and calcium bentonite materials that “appear to be virtually identical to the materials used in the Goss patent examples.” *Id.*; *see also id.* at 47 n.37 (citing Ex. 1003, 4:11–13, 4:64–5:4, 6:43–65) (addressing similarity in clay materials). The Petition also states that the typical bulk density of the sodium bentonite used in Goss is 66 lb/ft<sup>3</sup> while the typical bulk density of the calcium bentonite is 43 lb/ft<sup>3</sup>, based on Mr. Raymond's testimony. *See id.* at 50 (citing Ex. 1004 ¶ 88).

For the external surface area calculations used in the Reply based on the '397 patent methodology, Petitioner relies on Dr. Johnston's expert report from the Goss litigation that provides bulk density ranges of 62–66

lb/ft<sup>3</sup> for the sodium bentonite in Goss and 39–44 lb/ft<sup>3</sup> for the non-swelling clay used in Goss, which encompass the bulk density data Mr. Raymond already supplied with the Petition. *See* Pet. Reply 13–14 (citing Ex. 1017); Pet 50; Ex. 1004 ¶ 88. Using the data from Goss and bulk density ranges from Dr. Johnston’s expert report, Mr. Raymond calculates the external surface area of the sodium bentonite particles in Goss’s Sample G litter and concludes that the surface area percent exceeds 60% throughout the bulk density ranges, well above the 47% threshold required by claims 1 and 7. *See* Pet. Reply 15–16; Ex. 1013 ¶¶ 79–80; Ex. 1016.

We find Petitioner’s arguments and supporting testimony credible and persuasive. Petitioner relies heavily on the testimony of Mr. Raymond, a chemist with over 40 years of experience, including serving as director of research and development from 1990–1999 and senior technical specialist of a pet food company from 1999–2009. Ex. 1004 ¶¶ 4–7. This experience provides Mr. Raymond with a credible background to opine on what one of ordinary skill in the art would glean from Goss (filed in 1997) and the ’397 patent (first application filed in 2011), including the properties of the materials used in Goss, such as their bulk densities. *See id.* Importantly, Patent Owner does not argue that Mr. Raymond does not meet the definition of one of ordinary skill in the art, that Mr. Raymond lacks sufficient firsthand experience with litter products to testify as to the properties of the litter materials, that any of the data used in Mr. Raymond’s calculations as to Goss’s Sample G are wrong, or that Mr. Raymond performed any mathematical computations incorrectly when determining that Goss’s Sample G litter includes sodium bentonite with an external surface area that

easily exceeds the 47% claimed threshold. *See* PO Resp. 15–26, 35–40; PO Sur-reply 1–12, 15–17. Based on Mr. Raymond’s background and the lack of a meaningful dispute as to key areas of his testimony, we find his testimony as to the interpretation of Goss’s Sample G credible and persuasive.

Patent Owner takes issue with Petitioner’s reliance on the bulk density ranges Dr. Johnston uses in the Goss litigation because those ranges are based on materials “delivered in the plant,” but we do not find these arguments persuasive. *See* PO Sur-reply 17 (citing Ex. 2019, 54:23–55:21, 55:23–56:16). Importantly, Patent Owner does not rely on any testimony from Dr. Johnston in this proceeding that undermines the bulk density ranges Dr. Johnston used in the Goss litigation, or Mr. Raymond’s use of those same ranges in this proceeding. *See id.* Instead, Patent Owner’s argument appears to be based entirely on isolated deposition testimony from Mr. Raymond acknowledging what the figures meant, without any argument or evidence to the effect that using bulk density ranges for materials delivered “in a plant” are inappropriate, fall outside the scope of what the limitation or calculation requires, or even if the figures were inaccurate, whether they would materially impact Mr. Raymond’s calculations. *See id.* In addition, Patent Owner’s argument fails to undermine Mr. Raymond’s credible assertion that he agrees with the bulk density ranges Dr. Johnston used on the Goss litigation based on his own experience. *See* Ex. 1013 ¶ 79; Pet. Reply 15 (citing Ex. 1013 ¶ 79). Patent Owner’s vague arguments as to Petitioner’s use of the bulk density ranges do not undermine Petitioner’s use of that data in its analysis. *See* PO Sur-reply 17; Pet. Reply 13–16.

The bulk density data tell a consistent story in this proceeding, given that the bulk densities Mr. Raymond provided with the Petition fall within the ranges Dr. Johnston used in his expert declaration, which underscores the agreement of the two experts on this issue and the consistency between the data used in the Petition and Petitioner's Reply. *See* Pet. 50 (citing Ex. 1004 ¶ 88); Ex. 1004 ¶ 88 (providing "typical" bulk densities for the components in Goss's Sample G litter). As a result, even if Mr. Raymond performed calculations using only the bulk density data provided in the Petition, data we find credible based on Mr. Raymond's experience and Patent Owner's lack of rebuttal to those figures, the 47% surface area limitation would appear to be met using the bulk density figures in the Petition alone, and Patent Owner provides no argument or analysis to the contrary. In any event, we do not view the bulk density ranges Petitioner relies on in its Reply calculations as unreliable.

Nor do we find Petitioner's reliance on that data improper as too "new" for the reasons provided above—if Petitioner must be allowed to provide calculations based on Goss's Sample G using the methodology of the '397 patent (consistent with Patent Owner's claim construction), it should be able to use the bulk density data available to it. We do not view this use of extrinsic evidence to shed light on what Goss's Sample G teaches as a significant enough departure from the Petition that we should not consider Petitioner's calculations based on that data. Again, Petitioner's calculations seem to confirm that Goss discloses the 47% surface area limitation using the bulk density data provided in the Petition, without the need to rely on the bulk density ranges provided by Dr. Johnston's expert

report, and the additional data from Dr. Johnston's expert report merely confirms the soundness of the data in the Petition. Moreover, Patent Owner had the opportunity to rebut Petitioner's analysis and reliance on the data with calculations and data of its own from Dr. Johnston, but decided not to do so. *See* Papers 31, 32.

Patent Owner does not raise any additional substantive arguments against Petitioner's calculations and related arguments in its Reply. *See* PO Sur-reply 16–17. In its Response, Patent Owner raises arguments against Petitioner's approach in the Petition, but to the extent those arguments also apply to Petitioner's approach in the Reply, we find them unpersuasive. *See* PO Resp. 25–26, 35–40. For example, Patent Owner contends that the Petition fails to follow the methodology set forth in the '397 patent and fails to support its conclusions with sufficient "objective evidence or any rational inference," but Petitioner's Reply follows the methodology set forth in the '397 patent and provides additional objective evidence and calculations to support its contentions. *Compare id.* at 25–26, 35–36, *with* Pet. Reply 13–16; Ex. 1013 ¶¶ 79–80; Ex. 1016.<sup>15</sup>

Patent Owner further contends that Petitioner employs improper hindsight by relying on the '397 patent in the Petition to bolster its assertion that Goss's Sample G litter meets the 47% surface area limitation. PO Resp. 36–37 (citing Pet. 47–48). We disagree. As an initial matter, this argument

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<sup>15</sup> The Petition itself also provides objective data in the form of weight percentages, particle size, and bulk densities that are necessary to calculate an external surface area, and the calculations in the Reply based on the methodology in the '397 patent support the assertions in the Petition. *See* Pet. 47–50; Pet. Reply 13–16.

does not address Petitioner’s arguments and calculations in its Reply, which do not rely on similarities between the ’397 patent Example 6 and Sample G from Goss. *See* Pet. Reply 13–16. Petitioner uses data directly from Goss and from Patent Owner’s expert explaining the properties of the Goss materials in its calculations, not hindsight. *See id.* In addition, teachings from the challenged patent, or even references that post-date the challenged patent, may be used to shed light on what Goss discloses to one of ordinary skill in the art, without invoking impermissible hindsight. *See Monsanto Tech. LLC v. E.I. DuPont de Nemours & Co.*, 878 F.3d 1336, 1345 (Fed. Cir. 2018) (noting that extrinsic evidence may show what is necessarily present in a reference and the extrinsic evidence “need not antedate the critical date of the patent at issue”).

Patent Owner also argues the analysis in the Petition lacks support because it uses improper *mean* particle size data in Goss that does not align with the calculation methodology discussed in the ’397 patent, which “requires particle size *distribution* data.” PO Resp. 36 (emphasis added) (citing Ex. 2009, 37:2–5; Ex. 2010 ¶¶ 105–112). This argument does not address Petitioner’s calculations in the Reply, which employ the particle size data from Goss, and Patent Owner later describes Petitioner’s approach in the Reply as consistent with the methodology used in the ’397 patent. *See* Pet. Reply 15–16; Ex. 1013 ¶¶ 79–80; Ex. 1016; PO Sur-reply 23–24; PO Supp. Sur-reply 2. In addition, even though we assume that Patent Owner’s narrow claim construction applies and that the methodology of the ’397 patent must be followed to calculate external surface area, Patent Owner does not provide sufficient argument or analysis to further require that the

particle size data used in the methodology somehow excludes the particle size data used in Patent Owner's own Goss patent. *See* PO Resp. 36.

Further, even if the particle data of the '397 patent differs in some way from the particle size data in Goss, Patent Owner provides no analysis of the impact of those differences, much less an effort to undermine Petitioner's assertion, backed by credible testimony from Mr. Raymond, that Goss's Sample G litter meets the 47% surface area limitation. *See id.*

In summary, Petitioner credibly asserts, and Patent Owner does not credibly dispute, that using the data provided by Goss and bulk density ranges provided by Dr. Johnston's expert report in the Goss litigation, the percent external surface area of sodium bentonite in Goss's Sample G exceeds 60% for all values within the bulk density ranges, which far exceeds the claim requirement of 47% external surface area. *See* Pet. Reply 13–16; Ex. 1013 ¶¶ 79–80; Ex. 1016. Because we find these calculations credible, it was incumbent on Patent Owner to do more than raise an argument that maybe some of Mr. Raymond's assumptions had some undefined impact on the calculations. Patent Owner had multiple opportunities to use its unique position as owner of Goss with potential access to documents that would shed light on the properties of the Goss litter materials to provide alternative calculations that undermine Mr. Raymond's analysis, but declined to do so. The burden never shifts to Patent Owner, and Patent Owner was not required to submit any evidence to show Mr. Raymond's calculations were wrong. However, where, as here, we find Petitioner's argument and evidence persuasive and backed by credible expert testimony, it was incumbent upon

Patent Owner to do more than make the arguments it did against Petitioner's and Mr. Raymond's analysis to undermine Petitioner's showing.

Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that Goss discloses the 47% surface area limitation.

*b. Remaining Limitations of Claims 1 and 7*

Petitioner contends that Goss discloses the remaining limitations of independent claim 1, which include all of the remaining limitations of independent claim 7 because claim 7's limitations are a subset of claim 1. *See* Ex. 1001, claims 1, 7; Pet. 46–47, 49–51, 53–55. Patent Owner does not dispute that Goss discloses these limitations. *See* PO Resp. 34–40. We address Petitioner's showing for each of these limitations.

Petitioner contends that the preamble (“A litter”) does not limit the claims, but that Goss discloses a cat litter. Pet. 46. For the first limitation of claim 1 requiring “45% to 80% by weight of sodium bentonite,” Petitioner asserts that “Goss discloses a clumping animal litter having preferably sixty percent (60%) by weight or less of sodium bentonite.” *Id.* (citing Ex. 1003, code (57), 2:39–43, 8:25–30, Table V). For the limitation requiring “20% to 50% by weight of a non-clumping filler material,” Petitioner argues that “Goss discloses a clumping animal litter mixture comprised of no more than 60% of a particulate swelling clay, repeatedly identified in Goss as sodium bentonite, and at least 40% of a non-swelling granular clay material.” *Id.* at 49 (citing Ex. 1003, 2:34–44, 3:6–4:63, code (57)). Petitioner states that Goss does not describe the non-swelling clay material as a “filler” material, but that a “PHOSITA would have recognized it is being treated as a filler

material in the litter mixture of Goss” for a number of reasons. *Id.* (citing Ex. 1003, 3:38–4:5; Ex. 1004 ¶ 86). Patent Owner does not address Petitioner’s arguments and evidence as to these limitations.

We agree with Petitioner that Goss discloses a “litter” having “45% to 80% by weight of sodium bentonite” and “20% to 50% by weight of a non-clumping filler material.” *See* Pet. 46, 49. First, Goss discloses a litter because it repeatedly refers to its disclosed invention as litters. *See, e.g.*, Ex. 1003, code (54) (Title: “CLUMPING ANIMAL LITTER”), code (57) (Abstract: “A clumping animal litter utilizing the interparticle interaction of a swelling clay, such as sodium bentonite, in combination with a non-swelling clay material.”). Second, Goss discloses a litter that falls within the range of “45% to 80% by weight of sodium bentonite” because Goss describes litters having amounts of sodium bentonite falling within that range, including Goss’s Sample G using a 50-50 weight split between sodium bentonite and a non-swelling clay (e.g., calcium bentonite). *See* Ex. 1003, code (57), 2:34–44, 2:60–62; Pet. 46–48. As to the “20% to 50% by weight of a non-clumping filler material” limitation, we agree with Petitioner that one of ordinary skill in the art would view Goss’s non-swelling calcium bentonite clay as a “filler” material, and that Goss discloses using “20% to 50% by weight” of that material in its litters, including Sample G. *See* Ex. 1003, 3:38–4:5; Ex. 1004 ¶ 86; Pet. 47–49. Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that Goss discloses a litter comprising “45% to 80% by weight of sodium bentonite” and “20% to 50% by weight of a non-clumping filler material.”

As to the limitation requiring “wherein the litter has a bulk density less than about 58 lb/ft<sup>3</sup>,” Petitioner argues that “[w]hile Goss does not explicitly disclose a desired bulk density, it does disclose other characteristics of the litter, which enable one having ordinary skill in the art to calculate the resulting bulk density.” Pet. 49–50 (citing Ex. 1004 ¶ 88). According to Petitioner, “bulk densities of listed materials may be multiplied by the percentages of each listed material, and then added together.” *Id.* at 50. Using a bulk density of 43 lb/ft<sup>3</sup> for Goss’s “Blue Mountain” clay (calcium bentonite) and 66 lb/ft<sup>3</sup> for the 30/60 fines (sodium bentonite) in Goss’s Sample G, with the bulk densities provided by Mr. Raymond, Petitioner contends that the resulting litter has an overall density of 55 lb/ft<sup>3</sup>. *Id.* Patent Owner does not challenge Petitioner’s assertions as to this limitation in the Petition, or argue that Petitioner’s bulk density data, provided by Mr. Raymond, are incorrect. Because, as discussed above, we find that Mr. Raymond has the appropriate background and firsthand knowledge to testify credibly as to the properties of the materials in Goss’s Sample G, we find his testimony as to the bulk density of these materials, and the calculation of the overall litter bulk density, credible and persuasive. *See* Ex. 1004 ¶ 88. Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that Goss discloses a litter that “has a bulk density less than about 58 lb/ft<sup>3</sup>.”

Claim 1 also recites “wherein the litter when exposed to a wetting agent forms at least one clump, and wherein each at least one clump is mechanically separable from unwetted litter for disposal,” while claim 7 contains a similar limitation without the “mechanically separable”

requirement. Ex. 1001, claims 1, 7. Petitioner argues that “Goss discloses that when the litter is wetted with an aqueous liquid, a clump is formed having firmness of sufficient structural integrity and hardness to be removed,” such that it meets the “forms at least one clump” aspect of the limitation. *See* Pet. 50 (citing Ex. 1003, 3:14–26; Ex. 1004 ¶91). Petitioner also argues that “Goss discloses an animal litter that forms a clump of durable clump strength that can be mechanically separated and removed” to meet the “mechanically separable” aspect of the limitation. *See id.* at 51 (citing Ex. 1003, 5:34–44; Ex. 1004 ¶94). Patent Owner does not address or dispute Petitioner’s assertion that Goss discloses these limitations. We agree with Petitioner that Goss discloses litters that form clumps that are mechanically separable and can be removed, including Goss’s Sample G showing positive clump strength results. *See* Ex. 1003, 3:14–26, 5:34–44; Ex. 1004 ¶¶ 91, 94; Pet. 48, 50–51. We find that Petitioner proves by a preponderance of the evidence that Goss discloses a litter meeting the limitation of independent claim 1 reciting “wherein the litter when exposed to a wetting agent forms at least one clump, and wherein each at least one clump is mechanically separable from unwetted litter for disposal” and the similar limitation of independent claim 7.

*c. Conclusion as to Claims 1 and 7*

Based on the foregoing, we determine that Petitioner proves by a preponderance of the evidence that Goss discloses all of the limitations of claim 1. Because claim 7 contains limitations that are a subset of claim 1’s limitations, we determine that Petitioner proves by a preponderance of the evidence that Goss discloses all of the limitations of claim 7 for the same

reasons. As a result, we determine that Petitioner proves by a preponderance of the evidence that Goss renders independent claims 1 and 7 obvious.<sup>16</sup>

*5. Dependent Claims 3–6, 8, 10–16, and 18*

As discussed above in the motivation to combine analysis, Petitioner fails to articulate an adequate basis to combine Goss and House, which means that Petitioner fails to establish that any of claims 2, 9, 17, and 19 is invalid as obvious over Goss and House, because for those claims Petitioner relies solely on House for the limitations in those claims. In addition, we find that Petitioner establishes that Goss discloses all of the limitations of independent claims 1 and 7. The claims that remain subject to this challenge are dependent claims 3–6, 8, 10–16, and 18. Patent Owner does not directly address or dispute Petitioner’s argument that Goss discloses the limitations in these claims. *See* PO Resp. 34–40.

The analysis for independent claim 1 applies to several of these dependent claims because they contain the same limitations. This includes dependent claims 8, 10, 11, and 16. *See* Pet. 49–51, 55–60. The remaining claims 3–6, 12–15, and 18 contain additional limitations Petitioner addresses

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<sup>16</sup> Although we find the claims obvious based on Goss alone, we do not view the distinction between characterizing Petitioner’s reliance on Goss as anticipation or a single reference obviousness challenge as significant in this particular case, which does not involve any evidence of secondary considerations. *See Realtime Data*, 912 F.3d at 1373 (petitioner framed its challenge as relying on two references, and the Federal Circuit found no error in Board’s determination that the claims would have been obvious based on a single reference, even though patent owner argued that the challenge should have been framed as an anticipation challenge, because “anticipation is the epitome of obviousness” (citations omitted)).

by pointing to the relevant aspects of Goss as well as the supporting testimony of Mr. Raymond. *See id.* at 51–53, 55–61 (citing Ex. 1003; Ex. 1004). Patent Owner does not address Petitioner’s arguments and evidence as to these dependent claims or argue that Goss fails to disclose any of the limitations in these claims. *See* PO Resp. 34–40. We find Petitioner’s arguments and evidence as to dependent claims 3–6, 8, 10–16, and 18 persuasive, and adopt Petitioner’s argument and evidence as our own.<sup>17</sup> *See* Pet. 49–53, 55–61.

Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that Goss discloses all of the limitations of dependent claims 3–6, 8, 10–16, and 18 and that Goss renders these claims obvious.

*E. Anticipation Based on House*

Petitioner argues that House anticipates claims 1, 2, 7–12, and 16–19 of the ’397 patent. Pet. 2, 34–46. For each limitation, Petitioner points to specific portions of House that support its position, and declarant testimony addressing each limitation. *See id.* (citing Ex. 1004). As to the 47% surface

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<sup>17</sup> Aside from adopting Petitioner’s arguments and evidence as our own, we do not set forth separate formal findings as to Petitioner’s undisputed assertions. *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) (“Although the Board did not make findings as to whether any of the other claim limitations (such as fusion apertures or anti-migration teeth) are disclosed in the prior art, it did not have to: NuVasive did not present arguments about those limitations to the Board. . . . The Board, having found the only disputed limitations together in one reference, was not required to address undisputed matters.”); Paper 10, 9 (“Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.”).

area limitation, Petitioner argues that “[b]y virtue of House disclosing its litter contains a maximum of 80% by weight of sodium bentonite SCWEOS [“smectite clays which exhibit osmotic swelling”], a PHOSITA would have recognized that House at least inherently meets the claim limitation of ‘at least 47% of the total external surface of the litter.’” *Id.* at 36 (citing Ex. 1004 ¶ 55). Petitioner relies on declarant testimony that essentially repeats the arguments from the Petition. *See* Ex. 1004 ¶ 55.

For this challenge, Patent Owner argues that House does not expressly or inherently disclose the surface area limitation in independent claims 1 and 7. *See* PO Resp. 26–34. As to inherency, Patent Owner argues that Petitioner fails to provide adequate data or calculations in the Petition to support its argument. *See id.* at 26. Patent Owner contends that Petitioner improperly conflates percent by *weight* with percent *surface area* of sodium bentonite in House’s litters, which are not the same thing. *Id.* at 28–34.

In its Reply, Petitioner submits new calculations and testing data that allegedly show how House’s litters disclose the 47% surface area limitation using the methodology of the ’397 patent. *See* Pet. Reply 16–17, 22–24. In doing so, Petitioner relies on a combination of sodium bentonite and “paper balls.” *See id.* According to Petitioner, several litter blends falling within the weight percent ranges House discloses also meet the 47% surface area limitation. *See id.* at 17 (citing Exs. 1018, 1019, 1030).

In its Sur-reply, Patent Owner argues that Petitioner’s Reply improperly bases Petitioner’s analysis on new calculations and new evidence. *See* PO Sur-reply 1–6, 8–10. Patent Owner contends that the Petition merely identifies a long list of litters in House containing three

different types of sodium bentonite, and a longer list of potential cellulose filler materials, but does not identify any specific litter that anticipates the claims. *See id.* at 5. Patent Owner contends that the Reply “shifts course and relies on newly-identified litter compositions from House to support its Ground 1 anticipation arguments,” including a specific sodium bentonite material and “Biodac paper balls” as the filler material. *Id.* at 5–6 (citing Pet. Reply 17, 22–23). Patent Owner also asserts that the new arguments and evidence fail to show that House anticipates the claims for a number of reasons, including that Petitioner relies on specific types of sodium bentonite and Biodac paper balls that House fails to disclose. *See id.* at 13–15.

We find that Petitioner fails to prove by a preponderance of the evidence that House expressly or inherently discloses the 47% surface area limitation. We begin by addressing the Petition, which provides a single sentence of analysis of the limitation that contains several flaws. Pet. 36. First, the argument improperly conflates weight percent and percent surface area by suggesting that a given weight percent alone will inherently disclose a certain percent surface area. *Id.* (“By virtue of House disclosing its litter contains a maximum of 80% by weight of sodium bentonite SCWEOS, a PHOSITA would have recognized that House at least inherently meets” the 47% surface area limitation. (emphasis added)). As Patent Owner correctly points out, the two measurements are not the same, and the Petition provides no argument or evidence linking the weight percent of sodium bentonite to any specific external surface area of that material. PO Resp. 28–34. To make matters more confusing, the body of the argument in the Petition suggests that the 80% by weight of sodium bentonite leads to the

47% surface area limitation, but the claim chart summarizing the challenge suggests that litters having either 50% or 65% by weight of sodium bentonite leads to the 47% surface area limitation. *See* Pet. 36, 40. Neither statement, standing alone, provides any basis to bridge the gap between a mere weight percent to any specific surface area percent for sodium bentonite. *See id.* Notably, Petitioner fails to defend this approach in its Reply by arguing that House's weight percent of sodium bentonite alone discloses a certain surface area percent of sodium bentonite. *See* Pet. Reply 16–17, 22–24.

Second, unlike the challenge based on Goss, the Petition fails to identify any specific litter in House that it relies on to disclose the 47% surface area limitation. *See* Pet. 36, 47–48. The reference to the 80% weight percent alone (or other weight percentages in Petitioner's chart) does not identify the specific litter components Petitioner relies upon, which impacts whether the 47% surface area limitation is met or not. *See id.* at 36, 40. Merely stating that a litter contains a certain amount, by weight, of sodium bentonite does not identify the sodium bentonite used, much less the filler Petitioner contemplates in the many options House provides for those materials. Properties of both materials must be known in order to calculate an external surface area percent for sodium bentonite. The Petition refers to a large number of litters in House using various types of sodium bentonite and a long list of potential filler materials in the context of other limitations apart from the 47% surface area limitation, but providing such lists of potential litter materials could amount to dozens of potential litters and does

sufficiently identify any specific litter as the basis for Petitioner's challenge. *See id.* at 34–37.

Third, Petitioner provides no analysis or calculations that show that a composition formulated with House's 80% sodium bentonite and 20% filler material (or other weight percentages) would result in a litter that meets the 47% surface area limitation, and never mentions any particle sizes for any specific litter that would be necessary to perform that calculation. *See* Pet. 34–46. In addition, while the Petition mentions *overall* litter bulk densities, it does not identify bulk densities for the litter's *individual components* that would be necessary to calculate the surface area of the sodium bentonite. *See id.* at 37. In short, the Petition includes several fatal deficiencies that prevent assessment of the 47% surface area limitation using any claim construction.

Petitioner attempts to fill the holes in the Petition by relying on new calculations and test data in its Reply. *See* Pet. Reply 16–17, 22–24. We do not view consideration of this new argument and evidence in the Reply as proper under the guise of merely being responsive to Patent Owner's claim construction for the 47% surface area limitation. Here, as noted above, the one sentence of analysis in the Petition contains several fatal flaws that go beyond a mere difference in claim construction approaches, namely (1) Petitioner's argument improperly conflates weight percent with surface area percent; (2) Petitioner provides no specific reference to a specific litter in House in the Petition, rendering reliance on specific litters in the Reply entirely new and beyond the scope of the assertions in the Petition; and (3) the Petition lacks any reference to House's particle sizes or bulk densities for

litter components and, as a result, fails to provide the information necessary to perform a calculation of surface area percent using *any* reasonable claim construction, whether Petitioner's preferred broader approach or Patent Owner's narrower approach. Petitioner's Reply goes far beyond the arguments and evidence in the Petition, including reliance on new litter formulations with specific materials having specific properties. *See* Pet. Reply 16–17, 22–24. These new theories also include heavy reliance on Biodac paper balls that go beyond House's teachings because House merely refers to “paper” as a potential filler material, not Biodac paper balls, which include clay material. *See* PO Sur-reply 5–6, 14–15 (citing Ex. 1002, 5:2–10, cols. 9–12; Ex. 2019, 26:9–27:5, 30:6–13).

Under these circumstances, we do not address Petitioner's new argument and evidence in its Reply as to whether House discloses the 47% surface area limitation because the holes in the Petition go beyond a mere failure to address Patent Owner's claim construction for the limitation, and Petitioner's Reply introduces what amounts to new theories based on new portions of House never specifically identified in the Petition, as well as evidence that goes well beyond House's disclosure. *See Wasica*, 853 F.3d at 1286–87 (holding that the petitioner improperly shifted its position away from that in the petition by relying on a different portion of a prior art reference). Accordingly, because the Petition fails to establish that House discloses the 47% surface area limitation present in both independent claims 1 and 7, and we do not consider the new arguments in Petitioner's Reply, Petitioner fails to prove by a preponderance of the evidence that any of claims 1, 2, 7–12, and 16–19 is anticipated by House.

*F. Patent Owner's Revised Motion to Amend*

Patent Owner filed a contingent Revised Motion to Amend, presenting substitute claims 20–35. RMTA 1–2. Because we conclude that Petitioner shows, by a preponderance of the evidence, that challenged claims 1, 3–8, 10–16, and 18 are unpatentable, we consider Patent Owner's Revised Motion to Amend with respect to the substitute claims that correspond to these claims, namely proposed substitute claims 20–24, 26–32, and 34. We do not consider the Revised Motion to Amend as to proposed substitute claims 25, 33, and 35 because they seek to replace original claims 9, 17, and 19<sup>18</sup> that Petitioner did not prove to be unpatentable for the reasons provided above.

“Before considering the patentability of any substitute claims, . . . the Board first must determine whether the motion to amend meets the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121.” *See Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 4 (PTAB Feb. 25, 2019) (precedential). Patent Owner bears the burden of persuasion to show, by a preponderance of the evidence, that the motion to amend complies with these requirements. 37 C.F.R. § 42.121(d)(1). Specifically, a patent owner must provide a claim listing reproducing each proposed substitute claim, and must make an initial showing to demonstrate the following: (1) the amendment proposes a reasonable number of substitute claims; (2) the amendment responds to a ground of unpatentability involved in the trial; and (3) the amendment does not seek to enlarge the

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<sup>18</sup> Patent Owner did not propose a substitute for original claim 2. *See* RMTA App. A.

scope of the claims of the patent or introduce new subject matter. *See* 35 U.S.C. § 316(d); 37 C.F.R. § 42.121.

As also provided under our Rules, a petitioner bears the burden of persuasion to show, by a preponderance of the evidence, that any proposed substitute claim is unpatentable. 37 C.F.R. § 42.121(d)(2).

As explained below, Patent Owner has not met its burden of persuasion to show that the amendments comply with the requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121.

*1. Proposed Substitute Claims*

Patent Owner proposes to amend the '397 patent by adding new claims 20–35 as respective substitutes for original claims 1, 3, 4, and 7–19. *See* RMTA 1–2; *see also* RMTA App. A. Claim 20 is proposed as a substitute for original claim 1 and is reproduced below:<sup>19</sup>

20. A litter comprising:  
[[45%]] 55% to 80% by weight of sodium bentonite,  
wherein the sodium bentonite comprises at least 47% of an  
external surface area of the litter, and  
20% to [[55%]] 45% by weight of a non-clumping filler  
material, wherein the non-clumping filler material is a plant-  
based filler material,  
wherein the litter has a bulk density less than about 58  
lb/ft<sup>3</sup>, wherein the litter when exposed to a wetting agent forms  
at least one clump, and wherein each at least one clump is  
mechanically separable and removably clumpable from  
unwetted litter for disposal.

RMTA App. A, 26.

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<sup>19</sup> Underlined language reflects subject matter added to the original claims and bracketing indicates deletion.

Claim 23 is proposed as a substitute for original claim 7 and is reproduced below:

23. A litter comprising:  
[[45%]] 55% to 80% by weight of sodium bentonite,  
wherein sodium bentonite comprises at least 47% of an  
external surface area of the litter,  
wherein an average particle size of sodium bentonite is  
between 450 and 1000 microns, and  
wherein the litter when exposed to a wetting agent forms  
at least one removably clumpable clump.

RMTA App. A, 27.

The remaining proposed substitute claims depend directly or indirectly from proposed substitute claims 20 and 23. *See* RMTA App. A, 26–30.

*2. Whether Patent Owner’s Amendments Add New Matter*

*a. Written Description Requirement Legal Standards*

Patent Owner bears the burden of showing that its proposed amendments do not introduce new matter. 35 U.S.C. § 316(d)(3); 37 C.F.R. §§ 42.121(b)(1), 42.121(b)(2). New subject matter is any addition to the claims that lacks sufficient support in the subject patent’s original disclosure. *See TurboCare Div. of Demag Delaval Turbomach. Corp. v. Gen. Elec. Co.*, 264 F.3d 1111, 1118 (Fed. Cir. 2001) (“When [an] applicant adds a claim . . . , the new claim[] . . . must find support in the original specification.”). Patent Owner also is required to show written description support in “the original disclosure of the patent for each claim that is . . . amended,” and in “an earlier-filed disclosure for each claim for which benefit of the filing date of the earlier filed disclosure is sought.” 37 C.F.R. §§ 42.121(b)(1), 42.121(b)(2); *see also Fleming v. Cirrus Design Corp.*, 28

F.4th 1214, 1220, 1225–26 (Fed. Cir. 2022) (affirming Board decision finding lack of written description support for proposed amended claims, which led to finding that the claims “constituted new matter”).

The test for sufficiency of a written description is whether the disclosure “clearly allow[s] persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc) (quoting *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1562–63 (Fed. Cir. 1991)). To provide written description support, the originally-filed specification “must do more than merely disclose that which would render the claimed invention obvious.” *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1377 (Fed. Cir. 2009). The disclosure must “reasonably convey[] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad*, 598 F.3d at 1351. In addition, a “written description sufficient to satisfy the requirement of the law requires a statement of an invention, not an invitation to go on a hunting expedition to patch together after the fact a synthetic definition of an invention.” *Indivior UK Ltd. v. Dr. Reddy’s Labs. S.A.*, 18 F.4th 1323, 1329 (Fed. Cir. 2021) (quoting *Brenner v. Manson*, 383 U.S. 519, 536 (1966)). “[A] patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion.” *Id.*

The issues here involve written description support for a claimed range. As stated in *Indivior*, written description issues are “intensively fact-oriented” and vary, just as claim ranges do. *Indivior*, 18 F.4th at 1329. Furthermore, cases such as *Indivior* and *In re Wertheim*, 541 F.2d 257

(CCPA 1976) did not create “a rule applicable to all description requirement cases involving ranges” because “[b]roadly articulated rules are particularly inappropriate in this area.” *Id.* at 1329–30 (citing *Wertheim*, 541 F.2d at 263–65). A simple comparison of ranges and mechanical rules are not “a substitute for an analysis of each case on its facts to determine whether an application conveys to those skilled in the art the information that the applicant invented the subject matter of the claims.” *Id.* at 1330 (quoting *Wertheim*, 541 F.2d at 263).

*b. The Parties’ Arguments*

Patent Owner’s proposed substitute claims 20 and 23 amend the sodium bentonite weight percentage range of claims 1 and 7 to a range of 55% to 80%. RMTA 8, 10.

Patent Owner asserts that proposed substitute claim 20 does not add new matter because their Example 27 provides the minimum sodium bentonite weight percentage of 55% and Examples 28–30 provide respective weight percentages of 65%, 70%, and 86%. RMTA 4–5 (citing Ex. 2018, 349–351). With regard to proposed substitute claim 23, Patent Owner contends that Examples 20, 25, and 34 provide a sodium bentonite weight percentage of 55%, Example 12 provides a weight percentage of 80%, and Examples 3, 5, 8, 16, 18, 21, and 28 provide weight percentages between 55 and 80%. *Id.* at 5–6, 8, 10 (citing Ex. 2018, 331–333, 335, 337–338, 341–344, 349–350). Patent Owner also cites claims 31 and 33 of the ’021 application<sup>20</sup> to support the “55% to 80% by weight of sodium bentonite”

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<sup>20</sup> The ’397 patent issued from application No. 13/524,021 (“the ’021 application”), filed on Jun. 15, 2012.

range of proposed substitute claims 20 and 23. *Id.* at 8, 10 (citing Ex. 2018, 375–376).

Petitioner argues that, as to claim 20, the specification of the '397 patent fails to provide any “weight percentage ranges for sodium bentonite” and instead contains “random examples of litter mixture formulations with weight percentages of sodium bentonite from 40% to 100%.” Pet. Opp. RMTA 9–10. Petitioner contends that Patent Owner lacks any “textual disclosure it can rely on” and resorts to reliance on four Examples at the 55%, 65%, 70%, and 86% weight percentages, which ignores four other Examples that include plant-based filler material (as required by claim 20) that use weight percentages below the claimed range yet provide positive clumping results. *Id.* at 10 (citing Examples 26, 31–33; Ex. 1042). According to Petitioner, “there is nothing that sets the 55–86% range of sodium bentonite” apart from the Examples showing positive results below that range, and “there is no written description support for the claimed 55–80% range.” *Id.* at 10–11 (citing Ex. 1051 ¶¶ 49, 50).

Petitioner makes similar arguments as to claim 23, but notes that claim 23, unlike claim 20, does not require a plant-based filler material and therefore all of the Examples become relevant when evaluating support for the claimed range. *See* Pet. Opp. RMTA 12. Petitioner contends that “[w]hen all the examples are evaluated, no basis for separation of the claimed range can be discerned.” *Id.* According to Petitioner, all of the Examples meet the particle size limitation, 18 of the 46 Examples “have a sodium bentonite surface area below 47%,” and “‘all but five’ of the Examples meet the removably clumpable limitation.” *Id.* (citing Ex. 1043).

Petitioner further contends that “all of the examples in the 50% range having a sodium bentonite surface area greater than 47% are removably clumpable.” *Id.* Based on these Examples and “all this overlap in terms of efficacy and particle size,” Petitioner asserts that “there is no reason that one of skill in the art would see the 55–80% weight percentage of sodium bentonite as part of or critical to the invention of the [']397 Patent.” *Id.* (citing Ex. 1051 ¶¶ 49, 50). Petitioner argues that “there are no ‘blaze marks’ to direct one of ordinary skill in the art to [the] range being claimed” and that the written description must do more than provide “an invitation to go on a hunting expedition to patch together, after the fact, a contrived definition of an invention.” *Id.* at 12–13 (citing *Gen. Hosp. Corp. v. Sienna Biopharms., Inc.*, 888 F.3d 1368, 1372 (Fed. Cir. 2018); *Indivior UK Ltd. v. Dr. Reddy’s Labs. S.A.*, 18 F.4th 1323, 1329 (Fed. Cir. 2021)).

In response to Petitioner’s arguments in the Opposition, Patent Owner argues that there is no legal requirement that the claimed sodium bentonite range be expressly set forth in their specification. PO Reply RMTA 4–5. Patent Owner further contends that Petitioner is wrong that a specification must establish that the claimed sodium bentonite range is “critical to the invention” to satisfy written description and that the Federal Circuit has instead acknowledged that a claim need not cover all disclosed embodiments. *Id.* at 5. Patent Owner also asserts that “‘blaze marks’ are not necessary in all specifications” and that their “specification expressly describes example litters having the claimed weight percentages, which obviates the ‘blaze mark’ analysis.” *Id.* at 5–6.

In its Sur-reply, Petitioner argues that Patent Owner “does not dispute that the claimed range is not set forth in the [’]397 Patent” and that none of the cases Patent Owner relies on “relate to claimed ranges.” Pet. Sur-reply RMTA 7–8. According to Petitioner, the ’397 patent “merely includes 22 essentially random examples that have no characteristics in common that would allow a PHOSITA to draw any meaningful conclusion about the efficacy (or lack thereof) of any range of weight percentages of sodium bentonite.” *Id.* at 8. As to Patent Owner’s argument that it need not provide blaze marks because the claimed species is expressly described in the specification, Petitioner argues that, here, the specification fails to describe any species. *Id.*

*c. Discussion*

Based on our review of the arguments and evidence, we find that Patent Owner fails to meet its burden of showing that no new matter was added by the proposed amendments because the added limitations fail to satisfy the written description requirement. Several reasons support our conclusion.

First, although the claims recite a specific range of “55% to 80% by weight of sodium bentonite,” the specification of the ’397 patent never discloses any specific weight percent range as significant or part of the disclosed invention. While the lack of any disclosed range by itself does not mandate finding of lack of written description support, it does distinguish this case from several of those Patent Owner relies upon. *See Union Oil Co. of Cal. v. Atl. Richfield Co.*, 208 F.3d 989, 1000 (Fed. Cir. 2000) (holding “the asserted claims covered a range” “whereas the specification disclosed a

broader range”); *Wertheim*, 541 F.2d at 265 (disclosing “range of 25–60% along with specific embodiments of 36% and 50%” to support claimed range). Similarly, Patent Owner does not direct us to any portion of the specification that touts the importance of the endpoints of the claimed range (55% and 80%) to the invention, or that the Examples using weight percentages at those endpoints have any significance at all compared to Examples using other weight percentages. *See* RMTA 4–6, 8, 10; PO Reply RMTA 4–6; Pet. Opp. RMTA 9–13; Pet. Sur-reply RMTA 7–8.

Second, the specification of the ’397 patent does not disclose a cluster of individual data points showing that the claimed range demarcates an approximate line between weight percentages that work well and those that do not work well. For instance, to the extent the specification discloses a claimed feature important to the “present invention,” the specification stresses the importance of meeting the 47% surface area limitation coupled with successful clump strength, and does not tout any specific weight percent of sodium bentonite as advantageous, much less describe data points falling within the claimed range as part of the invention. Ex. 1001, 1:48–2:20, 45:40–57 (summarizing conclusion from tests shown in the Examples as pointing to the importance of 47% surface area requirement and not mentioning weight percent of sodium bentonite); *see also* Pet. Opp. RMTA 10. As Petitioner puts it, the ’397 patent Examples appear to “have no characteristics in common that would allow a PHOSITA to draw any meaningful conclusion about the efficacy (or lack thereof) of any range of weight percentages of sodium bentonite.” Pet. Sur-reply RMTA 8.

Third, as Petitioner points out, the Examples in the specification do not support Patent Owner's argument because they show that using weight percentages outside the claimed range still lead to advantageous results, and use of some weight percentages within the claimed range do not meet other claim requirements. *See* Pet. Opp. RMTA 10, 12. Specifically, Petitioner argues that for claim 20, Examples falling outside the claimed weight percent range still had advantageous clump test results and similar bulk densities. *See* Pet. Opp. RMTA 10 (citing Ex. 1042). Two of those Examples also met the 47% surface area limitation. *See* Ex. 1042; Ex. 1001, Examples 26, 33. For claim 23, Petitioner again points out that the '397 patent includes Examples outside the claimed weight percentage that still have favorable results. *See* Pet. Opp. RMTA 12 (citing Ex. 1043); Ex. 1043 (listing Examples 6, 23, 24, 26, and 33 as meeting the 47% surface area and removably clumpable limitations but falling below the claimed weight percent range). The numerous Examples falling outside the claimed weight range yet having positive results and meeting other claim limitations undermine Patent Owner's argument that written description shows possession of the claimed weight range as part of the invention.

On the other hand, other Examples falling within the claimed weight range fail to show positive results in one or more respects. During oral argument, Petitioner asserted that Examples 7, 10, 15, and 17 possessed sodium bentonite weight percentages within the claimed ranges but did not meet the 47% surface area limitation. Tr., 21:8–23. For example, Example 7 describes a litter having a sodium bentonite content of 65% (within the claimed range), but the sodium bentonite has an external surface

area of 45% (outside that claimed range), with positive clump strength results. Ex. 1001, Example 7; Ex. 2018, 334. Example 10 has a sodium bentonite weight content of 60% and an external surface area of 45%; Example 15 has a sodium bentonite weight content of 60% and an external surface area of 42%; and Example 17 has a sodium bentonite weight content of 60% and an external surface area of 45%. *See* Ex. 1001, 19:12–25:65, Examples 7, 10, 15, 17; Ex. 2018, 334, 336, 340–342. Furthermore, Examples 10 and 17, while meeting the claimed weight percent range, not only fail to meet the 47% surface area limitation but also fail to pass the clump strength tests. *See* Ex. 1001, 21:35–40, 25:60–65. The presence of these failed tests within the claimed weight range undermines Patent Owner’s argument that the specification shows possession of the claimed range as part of the invention.

Finally, Petitioner backs its interpretation of the ’397 patent specification with credible expert testimony from Mr. Raymond. *See* Pet. Opp. RMTA 10, 12 (citing Ex. 1051 ¶¶ 49, 50). We find Ms. Raymond’s opinions credible based on his experience in the field and the manner in which his opinions track the disclosure of the ’397 patent. *See* Ex. 1051 ¶ 2 (incorporating text from previous declarations); Ex. 1004 ¶¶ 2–9; Ex. 1051 ¶¶ 49–50 (reviewing Patent Owner’s cited examples and concluding that they do not support the claimed sodium bentonite range).

Although written description cases are fact dependent and no prior authority mandates our conclusion here, this case shares commonalities with *Invidior* and *Purdue Pharma*, which both involved claimed ranges and found a lack of written description based on specifications that failed to show

ranges and only disclosed isolated data points. *See Invidior*, 18 F.4th at 1328–29 (holding that “specific, particular examples” not enough to show written description support for claimed range); *Purdue Pharma L.P. v. Faulding Inc.*, 230 F.3d 1320, 1326 (Fed. Cir. 2000) (“Although the examples provide the data from which one can piece together the [ratio greater than two] limitation, neither the text accompanying the examples, nor the data, nor anything else in the specification in any way emphasizes the [claimed] ratio.”). Patent Owner cites *Nalpropion* to support its argument that data points alone may provide written description support for a claimed range, but even if we agree with that broad proposition, the examples here are too inconsistent, within and outside the claimed weight range, to show possession of the range. *See* PO Reply RMTA 4 (citing *Nalpropion Pharms., Inc. v. Actavis Labs. FL, Inc.*, 934 F.3d 1344, 1348 (Fed. Cir. 2019)). No similar issue was before the court in *Nalpropion*, which mainly addressed whether the data points in the specification were measured in a manner consistent with the claimed range generated using a claimed test method. *See Nalpropion*, 934 F.3d at 1349–50.

The analysis above applies to all of the proposed amended claims because they all contain the “55% to 80% by weight of sodium bentonite” limitation. *See* RMTA App. A, 26. As to proposed substitute claim 23, as noted above, Patent Owner cites Examples 27–29 for support. Patent Owner also cites Examples 11–13, 20–21, 25, 27, 29, 34, 38, and 39 when arguing that the ’021 application supports proposed substitute claim 23’s sodium bentonite range. RMTA 10 (citing Ex. 2018, 337–339, 343–344, 347, 349–351, 354, 357–358). The majority of these additional Examples have the

same sodium bentonite contents as Examples 27–29 (55%, 65%, and 70%).<sup>21</sup> The remaining Examples (Examples 12, 21, 25, 34, 38, and 39) provide only three additional data points: 55% (Examples 25, 34, and 38), 60% (Examples 21 and 39), and 80% (Example 12). Although these Examples include the claimed endpoints and some points in between, we do not view them as sufficiently demonstrating possession of a litter containing the full claimed range of 55% to 80% sodium bentonite given the numerous other Examples that undermine Patent Owner’s arguments, as discussed above.

Although we view our analysis above as applicable to proposed substitute claim 20 because it includes the “55% to 80% by weight of sodium bentonite” limitation, that claim also requires “a plant-based filler material” and a more limited number of Examples in the specification contain this material. *See* RMTA App. A, 26. But even if we limit our analysis to the Examples that include a plant-based filler, Patent Owner has not demonstrated by a preponderance of the evidence that proposed substitute claim 20 does not add new matter. Patent Owner cites Examples 27–30 for support, which include a plant-based filler and have sodium bentonite contents of 55%, 65%, 70%, and 86%. RMTA 5. However, these data points do not address the upper end of the claimed weight range, 80%. The closest examples Patent Owner cites to that endpoint are 70% and 86% with the latter being outside the claimed range.

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<sup>21</sup> Example 3, 65%; Example 5, 65%; Example 8, 70%; Example 11, 70%; Example 13, 65%; Example 16, 70%; Example 18, 65%; Example 20, 55%.

As a result, the specification not only fails to disclose the claimed *range* of 55% to 80% by weight of sodium bentonite, it also fails to disclose the upper endpoint of that range for litters that include a plant-based filler.

In addition, the specification discloses Examples 26 and 33 with plant-based filler that fall outside the claimed weight percent range but meet the 47% surface area limitation and show positive clump test results, further undermining Patent Owner’s argument that the specification shows possession of an invention based on the claimed weight percent range, even when we limit the analysis to examples with plant-based filler. *See* Ex. 1001, 31:1–40 (Example 26 having 50% by weight sodium bentonite and 48% surface area), 35:15–53 (Example 33 with 50% by weight sodium bentonite and 49% surface area).<sup>22</sup>

The remaining proposed substitute claims include the limitations of claims 20 and 23 from which they depend, and we do not discern any limitations in the dependent claims that cure the respective deficiencies of

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<sup>22</sup> Patent Owner cites to, but does not explain, its reliance on claims 31 and 33 of the ’021 application for support, and we note that claim 31 does not recite a sodium bentonite content. Ex. 2018, 375–376. Claim 33 recites a *filler* content of 10% to 53% for a mixture but does not recite a sodium bentonite content. *Id.* at 376. To the extent Patent Owner asserts that sodium bentonite would comprise the remainder of claim 33’s composition, we note that claims 31 and 33 use the term “comprising,” which permits the inclusion of other components. Therefore, the remainder of claim 33’s composition would not necessarily be solely sodium bentonite (e.g., 47% to 90% of the mixture). Moreover, even if claim 33 would imply a sodium bentonite range (e.g., 47% to 90% of the mixture), which we do not necessarily agree with, such a range differs significantly from the range in the proposed substitute claims of “55% to 80%” and would not aid Patent Owner’s written description arguments.

the independent claims from which they depend. *See* RMTA App. A, 26–30. Therefore, Patent Owner has not shown by a preponderance of the evidence that any of the proposed substitute claims do not introduce new matter.

We conclude that Patent Owner's Revised Motion to Amend, in seeking to include the limitation reciting “55% to 80% by weight of sodium bentonite” as a part of the proposed substitute claims, violates the prohibition of adding new subject matter set forth in 35 U.S.C. § 316(d)(3) and 37 C.F.R. § 42.121(a)(2)(ii). Accordingly, we deny Patent Owner's Revised Motion to Amend on this basis alone.

Because we determine that proposed substitute claim’s sodium bentonite range introduces new matter, we do not analyze whether the remaining new limitations of the proposed substitute claims introduce new subject matter.

### *3. Petitioner’s Arguments for Patentability*

We found above that Patent Owner failed to meet its burden of showing that the proposed amended claims do not add new matter because they fail to satisfy the written description. In addition, even if we placed the burden on Petitioner to prove unpatentability based on its written description arguments, we find that Petitioner met its burden for the same reasons discussed above. Specifically, for the reasons discussed above with regard to proposed substitute claims 20 and 23, we agree with Petitioner that the limitation reciting “55% to 80% by weight of sodium bentonite” lacks written description support. *See* Pet. Opp. RMTA 9–13; Pet. Sur-reply RMTA 7–8. Accordingly, even if we did not find that Patent Owner failed

to meet its burden of showing compliance with the requirements of 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121, we would find that Petitioner met its burden of proving unpatentability of the amended claims.

Because Patent Owner has not met the requirements for the Revised Motion to Amend for the reasons discussed above, and Petitioner met its burden of showing unpatentability of all of the proposed amended claims based on a lack of written description support, we do not reach the remainder of Petitioner's arguments regarding the alleged unpatentability of the proposed substitute claims.

### CONCLUSION

In summary:

| <b>Claim(s)</b>        | <b>35 U.S.C. §</b> | <b>Reference(s)/ Basis</b> | <b>Claim(s) Shown Unpatentable</b> | <b>Claim(s) Not Shown Unpatentable</b> |
|------------------------|--------------------|----------------------------|------------------------------------|----------------------------------------|
| 1, 2, 7–12, 16–19      | 102                | House                      |                                    | 1, 2, 7–12, 16–19                      |
| 1–19                   | 103                | Goss, House                | 1, 3–8, 10–16, 18                  | 2, 9, 17, 19                           |
| <b>Overall Outcome</b> |                    |                            | 1, 3–8, 10–16, 18                  | 2, 9, 17, 19                           |

| <b>Revised Motion to Amend Outcome</b>      | <b>Claim(s)</b>  |
|---------------------------------------------|------------------|
| Original Claims Cancelled by Amendment      |                  |
| Substitute Claims Proposed in the Amendment | 20–35            |
| Substitute Claims: Motion to Amend Granted  |                  |
| Substitute Claims: Motion to Amend Denied   | 20–24, 26–32, 34 |
| Substitute Claims: Not Reached              | 25, 33, 35       |

ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 3–8, 10–16, and 18 of the '397 patent are determined to be unpatentable;

FURTHER ORDERED that claims 2, 9, 17, and 19 of the '397 patent are not shown to be unpatentable;

FURTHER ORDERED that Patent Owner's Revised Motion to Amend is *denied*; and

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

IPR2022-01138  
Patent 11,026,397 B2

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