

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMCOL INTERNATIONAL CORP.,
Petitioner,

v.

OIL-DRI CORPORATION OF AMERICA,
Patent Owner.

IPR2022-01107
Patent 11,026,397 B2

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)

Petitioner AMCOL International Corp. challenges claims 1–19 of U.S. Patent No. 11,026,397 B2 (Ex. 1001, “the ’397 patent”), which is assigned to Patent Owner 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, 18, and 19 are unpatentable. We also deny Patent Owner’s Revised Motion to Amend the claims.

BACKGROUND

A. Procedural History

AMCOL International Corp. (“Petitioner”), filed a Petition requesting *inter partes* review of the challenged claims. Paper 1 (“Pet.”). Oil-Dri Corporation of America (“Patent Owner”) filed a Preliminary Response. Paper 7. With our authorization, Petitioner filed a Preliminary Reply (Paper 8), and Patent Owner filed a Preliminary Sur-reply (Paper 9). 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 10 (“Institution Decision” or “Inst. Dec.”).

After institution, Patent Owner filed a Response (Paper 16, “PO Resp.”), Petitioner filed a Reply (Paper 19, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 22, “PO Sur-reply”). Patent Owner filed a Motion to Amend (Paper 17), Petitioner filed an Opposition to that Motion (Paper 20), and Patent Owner filed a related Reply (Paper 25). We provided Preliminary Guidance in response to Patent Owner’s Motion to Amend. Paper 25. Thereafter, Patent Owner filed a Revised Motion to Amend (Paper 29, “RMTA”), Petitioner filed an Opposition to that Motion (Paper

31, “Pet. Opp. RMTA”), Patent Owner filed a related Reply (Paper 33, “PO Reply RMTA”), and Petitioner filed a related Sur-reply (Paper 35, “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 43, “Tr.”).

B. Related Proceedings

The parties identify the following proceedings involving the ’397 patent or related patents: *Oil-Dri Corporation of America v. AMCOL International Corp.*, No. 1:21-cv-00991 (N.D. Ill.); IPR2022-00206; and IPR2022-00691. Pet. 3–4; Paper 5, 1 (Patent Owner’s Mandatory Notices), 1. In addition, IPR2022-01138, an *inter partes* review brought by a different petitioner and instituted shortly after institution of this proceeding, also addresses claims 1–19 of the ’397 patent. *See* IPR2022-01138, Paper 9.

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. We reproduce independent claims 1 and 7 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, and

20% to 55% by weight of a non-clumping filler material, wherein the litter has a bulk density less than about 58 lb/ft³, 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. As can be seen from claims 1 and 7, claim 1 contains all of the limitations of claim 7, as well as several additional limitations. *See id.*

E. Asserted Grounds of Unpatentability

Petitioner challenges claims 1–19 on the following grounds (Pet. 4):

Claims Challenged	35 U.S.C. §	References/Basis
1, 3–8, 10, 11, 13–16	102	Goss ¹
2, 9, 12, 17–19	103	Goss

Petitioner supports its challenges with a declaration from Christina M. Borgese in support of the Petition (Ex. 1003) and a second declaration from Ms. Borgese in support of Petitioner’s Opposition to Patent Owner’s Revised Motion to Amend (Ex. 1031). Patent Owner relies on a declaration from Dr. Clifford T. Johnston in support of its Response (Ex. 2009) and another declaration from Dr. Johnston in support of Patent Owner’s Revised Motion to Amend (Ex. 2019).

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

¹ US 5,975,019, issued Nov. 2, 1999 (“Goss,” Ex. 1005). Petitioner generally underlines Goss and italicizes claim language in the Petition, but for consistency we remove that emphasis.

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.² *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

An obviousness analysis must include a reason, based upon rational underpinnings, 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, 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.*

² The parties do not address any objective indicia of nonobviousness in this proceeding.

Petitioner contends that a person having ordinary skill in the art “would have a bachelor’s degree in chemistry or chemical engineering or an equivalent degree and sufficient work experience in animal litter process development. A bachelor’s degree is not explicitly necessary.” Pet. 4. Petitioner further contends that “[h]ands-on experience in the field of animal litter process development could substitute for possessing a degree if that individual’s experience is in contributing to and/or leading the process development effort rather than following a set of instructions given to them.” *Id.* at 4–5. Petitioner asserts that such a person “should have familiarity with the process of validating relevant test methods and qualifying analysts as well as familiarity with the composition and chemistry of various clays used in animal litter (including sodium bentonite)” and that such a person “would have gained this familiarity through education, training and/or experience.” *Id.* Patent Owner does not dispute Petitioner’s proposed definition of the level of ordinary skill in the art. PO Resp. 14.

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 that would be used in a civil action 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. We need not construe explicitly any claim terms that would not change the outcome of the analysis below. *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))).

Petitioner proposes constructions for the terms “filler material,” “clump strength,” “clumping agent,” and “wetting agent.” Pet. 17. Patent Owner does not dispute Petitioner’s constructions for these terms, but argues that these constructions are unnecessary to resolve any controversy in this proceeding. PO Resp. 14–15. Based on our review of the current record, we agree with Patent Owner that we need not formally construe any claim terms to determine resolve the patentability issues in this *inter partes* review.

D. Anticipation Based on Goss

Petitioner argues that Goss anticipates claims 1, 3–8, 10, 11, and 13–16 of the ’397 patent. Pet. 4, 23–63. Patent Owner raises several arguments against this challenge. *See* PO Resp. 15–35. We provide a brief overview of Goss 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. 1005, code (57). Patent Owner is the assignee of Goss, and Goss discloses similar compositions as the ’397 patent. *See id.* at code (73). For example, Goss not only emphasizes the weight percentages of sodium bentonite and filler material, but also 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. 1005, 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. Discussion of Independent Claims 1 and 7

Petitioner argues that Goss discloses each limitation in claims 1, 3–8, 10, 11, and 13–16. Pet. 4, 23–63. For each limitation, Petitioner points to specific portions of Goss that support its position, and expert testimony addressing each limitation. *See id.* (citing Ex. 1003). Patent Owner argues that (1) Petitioner fails to demonstrate that Goss expressly or inherently discloses the limitation reciting “wherein the sodium bentonite comprises at least 47% of an external surface area of the litter” (the “47% surface area limitation,” found in independent claims 1 and 7); and (2) Petitioner fails to demonstrate that Goss discloses a litter having “a bulk density less than about 58 lb³/ft³” (found in independent claim 1). *See* PO Resp. 15–35.

³ The ’397 patent and claims use the “lb/ft³” nomenclature, while the parties often refer to “lbs/ft³.” *See, e.g.,* Ex. 1001, claim 1; Pet. 5, 29, 35; PO

Patent Owner does not address or contest Petitioner's arguments and evidence as to any other limitations or claims subject to this anticipation challenge. *See id.* We address the parties' arguments and evidence in the context of each limitation of independent claim 1 below.

a. "A litter comprising: 45% to 80% by weight of sodium bentonite"

Petitioner contends that, if the preamble ("A litter") limits the claim, Goss discloses a number of samples comprising sodium bentonite and a non-swelling clay that Goss describes as "litters." Pet. 23–25 (citing Ex. 1003 ¶¶ 96–97; Ex. 1005, code (57), 3:6–8, 5:42–45, 5:51–54, Tables I–III). Patent Owner does not address or dispute Petitioner's assertion that Goss discloses litters. We agree with Petitioner that Goss discloses a litter because it repeatedly refers to its disclosed invention as litters. *See, e.g.*, Ex. 1005, 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."); Ex. 1003 ¶¶ 96–97. We find that Petitioner proves by a preponderance of the evidence that Goss discloses the preamble of claim 1.

For the first limitation of claim 1 requiring "45% to 80% by weight of sodium bentonite," Petitioner asserts that Goss's Sample N, which Petitioner relies on throughout the Petition, discloses a litter comprising 50% by weight of sodium bentonite, which Goss refers to as "FS-40" clay. Pet. 25–

Resp. 4, 40. For consistency, we use the patent's terminology throughout and do not indicate any alterations to quotations from the parties' briefs.

27 (citing Ex. 1003 ¶¶ 99–101; Ex. 1005, 2:59–62, 3:33–36, 4:64–5:5, 5:48–55, 5:58–60, Tables I–III). Petitioner further contends that one of ordinary skill in the art would understand that Sample N contains 50% by weight FS-40 (sodium bentonite) and 50% by weight “BL(2),” a non-swelling “Blue Mountain” clay. *Id.* at 27 (citing Ex. 1003 ¶ 101); *see also id.* at 21–23 (describing Goss’s FS-40 and BL(2)). Patent Owner does not address or dispute Petitioner’s assertions as to this limitation. We agree with Petitioner that Goss discloses a litter in Sample N that falls within the range of “45% to 80% by weight of sodium bentonite” because Goss describes its FS-40 clay as sodium bentonite and states that Sample N (and numerous other examples) contain a “50/50 blend of clay and sodium bentonite,” which Goss also describes as an “approximately equal to weighed out clay material.” *See, e.g.,* Ex. 1005, 2:59–62, 3:33–36, 5:58–60, Tables I–III; Ex. 1003 ¶¶ 99–101. We find that Petitioner proves by a preponderance of the evidence that Goss discloses a litter having “45% to 80% by weight of sodium bentonite.”

b. “wherein sodium bentonite comprises at least 47% of an external surface area of the litter”

(1) The Parties’ Positions

As to the 47% surface area limitation, Petitioner argues that Goss meets the limitation by calculating the external surface area of Goss’s Sample N. Pet. 28–46. Petitioner states that it follows the “nine-step process” the ’397 patent discloses, which “requires knowledge of three properties of the litter composition: the particle-size distribution, bulk density, and percent by weight.” *Id.* at 28 (citing Ex. 1003 ¶ 104). Petitioner notes that Goss provides the particle-size distribution for the

sample components in Tables I and II. *See id.* (citing Ex. 1003 ¶ 105). For the calculation, Petitioner’s expert Ms. Borgese converted the “percentage of material passing through” to the “percentage of material retained” to be consistent with the calculation of the ’397 patent. *Id.* at 28–29 (citing Ex. 1003 ¶¶ 77–79, 105).

As to the bulk density of each component in Goss’s Sample N, Petitioner argues that the information was “known to a Skilled Artisan by the effective filing date of the [’]397 Patent.” Pet. 29. Petitioner contends that, as “Ms. Borgese explains, the FS-40 (‘sodium bentonite’) component was known to have a bulk density of 58–64 lb/ft³ based on available information such as” clay supplier data sheets from 1999 and 2002 demonstrating the bulk density of sodium bentonite FS-40. *Id.* (citing Ex. 1003 ¶¶ 82–83, 106; Ex. 1018, 1; Ex. 1024, 1); *see also id.* at 21–22 (discussing properties of FS-40). For the non-swelling filler-clay material BL(2), Petitioner argues that “the range of potential bulk densities for BL(2), 35–47 lb/ft³, was also known to a Skilled Artisan,” and relies on Ms. Borgese’s testimony and the Blue-Mountain “RVM” clay bulk densities disclosed in the ’397 patent. *Id.* at 29–30 (citing Ex. 1001, Examples 3–25, 34, 36–43, 9:29–31; Ex. 1003 ¶¶ 84–87, 106). Petitioner contends that Blue Mountain clays, including BL(2), were mined by Patent Owner in the Blue Mountain region of Mississippi and therefore a PHOSITA would understand that BL(2) has the same or similar characteristics as the Blue Mountain RVM clay disclosed in the ’397 patent. *See id.* at 22–23 (citing Ex. 1003 ¶¶ 84–86). Petitioner further argues that because these clays have “the same or similar characteristics, they would have the same range of potential bulk

densities.” *Id.* (citing Ex. 1003 ¶ 87). When performing her calculations of surface area for the litter components in Goss Sample N, “Ms. Borgese applies a conservative expansion of the bulk-density range of FS-40 from 58–64 lb/ft³ to **55–65 lb/ft³**” and “also applies the known bulk-density range for BL(2), **35–47 lb/ft³**.” *Id.* at 35 (citing Ex. 1001, Examples 3–25, 34, 36–43, 9:29–31; Ex. 1003 ¶¶ 82–87, 106, 117; Ex. 1018, 1; Ex. 1024, 1).

Finally, as to the percent by weight attributable to each component, Petitioner points to Goss, which states that Sample N uses “50% by weight FS-40 (‘sodium bentonite’) and 50% by weight a BL(2) (‘non-clumping filler material’).” Pet. 30 (citing Ex. 1003 ¶¶ 101, 106); Ex. 1005, 2:58–62. Petitioner argues that “[o]nce a Skilled Artisan possesses these three pieces of information, he or she can apply the nine-step methodology of the [’]397 Patent to determine the percentage of ‘*total external surface area*’ attributable to each of the components in Goss Sample N.” *Id.*

Petitioner acknowledges that the data provided in Goss for particle size data “modestly differs from” the particle size data used in the ’397 patent, and attempts to address these differences in several ways. Pet. 30 (citing Ex. 1003 ¶ 108). First, Petitioner argues that “the [’]397 Patent contains a small amount of additional granularity” including sieve screens at “30, 35 and 40 mesh,” whereas Goss only discloses screens at 30 and 40 mesh. *Id.* Petitioner argues that in cases where there is an intermediate mesh size, “a Skilled Artisan would evenly distribute the sample reported as retained on the 40 mesh screen in Goss between the 40 and 35 mesh screens.” *Id.* at 31 (citing Ex. 1003 ¶¶ 109–110). Petitioner argues that one of ordinary skill in the art would do this because this “is the most natural

particle-size distribution” as the industrial process for generating clays “creates samples with similar amounts of similarly sized particles.” *Id.* at 31–33 (citing Ex. 1003 ¶¶ 111–112, 115; Ex. 1020, 30).

After distributing the particle sizes evenly, Petitioner calculates the external surface area of the components for Goss Sample N across the possible ranges of bulk densities for sodium bentonite FS-40 and Blue Mountain clay BL(2). Pet. 35–46. Petitioner alleges that the calculations demonstrate that for all bulk densities in the ranges identified above for FS-40 and BL(2), the sodium bentonite in Goss Sample N comprises over 47% of the external surface area. *Id.* at 43–44 (citing Ex. 1003 ¶¶ 117–118). Petitioner argues that the lowest calculated percentage of the external surface area of 61% occurs when FS-40 has a bulk density of 65 lb/ft³ and BL(2) has a bulk density of 35 lb/ft³. *Id.* Petitioner further argues that even without the assumptions relating to distributing the particle sizes evenly across the mesh sizes for the sieves and using the bulk densities which maximize BL(2) in the calculation, the sodium bentonite would still be at least 50% of the external surface area of the mixture. *Id.* at 45–46 (citing Ex. 1003 ¶¶ 119–120, App. C-2).

Patent Owner first argues that Petitioner fails to establish that Goss expressly discloses the 47% surface area limitation because “the Petition concedes that ‘external surface area’ of a litter component is not mentioned in Goss.” PO Resp. 16 (citing Pet. 72). Second, Patent Owner argues Petitioner fails to establish that Goss inherently discloses the 47% surface area limitation. *See id.* at 16–33. Patent Owner does not argue that Petitioner or Ms. Borgese fails to follow the steps for calculating the surface

area correctly or otherwise makes any mathematical errors. *See id.* Instead, Patent Owner points out that Petitioner needs reliable bulk density data for Goss’s sodium bentonite (FS-40) and non-swelling clay (BL(2)) in order to calculate surface area, and argues that Petitioner fails to use reliable bulk density data in its calculations. *See id.* Patent Owner asserts that Goss fails to expressly disclose bulk densities for its litter components, and that Petitioner “resorts to extrinsic evidence, assumptions and innuendos to plug this hole in its proofs as to the bulk density of FS-40 and BL(2) and Sample N.” *Id.* at 18. According to Patent Owner, “bulk density is not an inherent property of clays and is a variable value depending on where the clay was mined and how it was processed” and “[t]here are various ways to measure bulk density.” *Id.* at 18–19 (citing Ex. 2009 ¶¶ 66–73).

As to Petitioner’s FS-40 bulk density data, Patent Owner first argues that the technical data sheets Petitioner relies upon are inadmissible hearsay and unauthenticated. PO Resp. 20–21. Patent Owner asserts that the data sheets are used to prove the truth of the matter asserted—the bulk density of FS-40—and that the dates on the documents are hearsay as well. *Id.* Second, Patent Owner argues that Petitioner fails to establish that Goss’s FS-40 “has the same properties as the ‘FS-40’ sodium bentonite disclosed” in the technical data sheets, which are dated years later than Goss. *Id.* at 21–22 (citing Ex. 2008, 20:10–22, 21:18–25, 22:1–5, 24:1–10). According to Patent Owner, Goss’s FS-40 has different properties because the particle size distribution data for Goss’s FS-40 differs from the FS-40 in the technical data sheets. *Id.* at 22–23 (citing Pet. 28, 68 n.5; Ex. 2008, 43:6–24; Ex. 2009 ¶¶ 66–73, 92–93). Based on this differing data, Patent Owner asserts

that a “PHOSITA cannot assume that FS[-]40 from pre-1997 will have the same, or even similar, bulk densities as reported in the 1999 and 2002 technical sheets.” *Id.* at 23–24 (citing Ex. 2009 ¶¶ 68, 91; IPR2022-01138, Ex. 1004 ¶ 47). Patent Owner also points to the different bulk densities in the technical data sheets themselves, despite having the same particle size distribution, as further evidence that Petitioner cannot assume that all FS-40 products have the same properties. *Id.* at 24–25. Finally, Patent Owner argues that the failure of the technical data sheets to describe how bulk density was measured also matters because different measurement methods can impact the surface area calculations. *Id.* at 26–28 (citing Ex. 1001, 12:64–13:42; Ex. 1012, 8:13–18; 8:45–50; Ex. 2008, 26:17–24, 27:2–12, 39:4–9; Ex. 2009 ¶ 95).

As to Petitioner’s reliance on Goss’s BL(2) for the non-clumping clay, Patent Owner argues that Petitioner fails to establish that Goss’s BL(2) has the same bulk density as the Blue Mountain RVM clays used in the ’397 patent. PO Resp. 28–29 (citing Pet. 22–23, 35; Ex. 1003 ¶¶ 86–87). According to Patent Owner, “Petitioner simply assumes that BL(2) and Blue Mountain *RVM* will have ‘*generally the same* chemical and physical properties’ because they both include Blue Mountain in their name,” “[b]ut similarity in name does not mean those clays have the same properties, including bulk density.” *Id.* at 29 (citing Ex. 1003 ¶ 86; Ex. 2009 ¶ 99). Patent Owner further contends that Petitioner “fails to provide evidence that *Blue Mountain RVM* is the same clay as BL(2), that it came from the same mine, that both were processed in the same way, or that both would necessarily have the same properties.” *Id.* at 29–31 (citing Ex. 2008, 32:9–

25; Ex. 2009 ¶ 103; IPR2022-01138, Ex. 1004 ¶ 47). Patent Owner also asserts that Ms. Borgese conceded that she did not know if the clays were processed in “exactly the same” way. *Id.* at 30–32 (citing Ex. 1003 ¶ 112; Ex. 2008, 33:3–10). Finally, Patent Owner argues that “the evidence suggests that the two clays have different properties” because they are from different time periods, and that Petitioner fails to establish Goss’s BL(2) will *necessarily* have a bulk density between 35–47 lb/ft³, as required for inherency. *Id.* at 32–33 (citing Ex. 1003 ¶ 117).

In its Reply, Petitioner argues that the bulk density of the materials in Goss were known to a skilled artisan. *See* Pet. Reply 2–11. Petitioner contends that the bulk density issue “turns on what a Skilled Artisan would have known to be the range of bulk densities for FS-40 and Blue Mountain (2)” and Ms. Borgese provides “the only expert opinion of record” on that issue. *Id.* at 3–4 (citing Ex. 1003 ¶¶ 83–87, 106, 117; Ex. 2008, 23:20–25, 29:4–9, 30:6–16, 52:17–53:3). According to Petitioner, Dr. Johnston limits his analysis to analyzing Goss’s express disclosure and “does not opine that Petitioner used the wrong range of bulk densities for FS-40 or Blue Mountain (2) in its analysis.” *Id.* at 4–5 (citing Ex. 2009 ¶¶ 81, 87, 96). Petitioner asserts that “as long as the bulk densities of these components fall *anywhere* in the range of bulk densities identified by Petitioner, Goss anticipates the claims challenged in Ground 1.” *Id.* at 5–6 (citing Pet. 44).

As to Goss’s FS-40 and Patent Owner’s arguments as to the technical data sheets, Petitioner contends that Patent Owner “misapprehends the Petition” and that the “Petition does not turn on whether FS-40 in Goss is the ‘same’ as FS-40 in the Technical Information Sheets.” Pet. Reply 6–7

(citing Pet. 44; Ex. 1003 ¶¶ 82–83; Ex. 1030, 30:2–6). Petitioner argues that even if the FS-40 in the technical data sheets were made at different times using different methods that led to different properties, “those differences are not material to patentability” when “Patent Owner does not explain how these differences would have caused the bulk density of FS-40 in Goss to fall outside of the range that Ms. Borgese concluded would render the claims unpatentable.” *Id.* at 7. Petitioner also contends that the technical data sheets “support Ms. Borgese’s opinion that the properties of FS-40 would not have ‘significantly changed’ at least between when Goss was filed and when the earlier of the two Technical Information Sheets was published” because the typical particle size and characteristics remained the same between at least 1999 and 2002. *Id.* at 7–8 (citing PO Resp. 21; Ex. 2008, 24:7–15; Ex. 2009 ¶ 91).

As to BL(2), Petitioner argues that Patent Owner’s arguments suffer from the same defects as its arguments regarding FS-40. Pet. Reply 9. Petitioner asserts that Dr. Johnston never contends that the range Ms. Borgese uses “is incorrect” and he “only opines” that the properties will vary depending on how the clay is mined and processed without explaining how the differences would result in the clay falling outside Ms. Borgese’s bulk density range. *Id.* at 9–10 (citing Ex. 1003 ¶¶ 86–87; Ex. 2009 ¶¶ 100–103). Petitioner also argues that when Patent Owner asserts that Petitioner lacks evidence that BL(2) clay falls within Ms. Borgese’s range, the assertion lacks any support from Dr. Johnston, who only states that the BL(2) in Goss and the ’397 patent are not the “same,” but does not dispute that they are similar. *Id.* at 10 (citing PO Resp. 33; Ex. 2009 ¶¶ 97–98). Finally,

Petitioner argues that Patent Owner's statements in a district court action contradict its assertions here, because in that proceeding Patent Owner argued that Goss's first embodiment was made using a Blue Mountain RVM clay that shares similarities with BL(2) clay in Goss and Blue Mountain RVM clay in the '397 patent. *Id.* at 10–11 (citing Ex. 1001, Fig. 18; Ex. 1003 ¶ 105; Ex. 1029 ¶ 9).

As to Patent Owner's hearsay arguments tied to the technical data sheets, Petitioner argues that the documents are not used for a hearsay purposes, that Patent Owner waived its right to object to the 1999 technical data sheet, and that, even if the documents do contain hearsay, they fall within numerous exceptions. Pet. Reply 19–23. For example, Petitioner argues that the documents are admissible and not hearsay because they are used to establish the knowledge of one of ordinary skill in the art, that a hearsay exception allows experts to rely on documents of “reliable authority” in their direct examination, and that Ms. Borgese's opinions based on the documents should be admissible even if the documents themselves are not. *See id.*

In its Sur-reply, Patent Owner argues that it need not affirmatively opine that Petitioner's bulk density ranges are incorrect because Patent Owner does not have the burden to do so, and it can show Petitioner fails to meet its burden by showing the bulk density ranges are unreliable and not supported by substantial evidence. PO Sur-reply 2 (citing Ex. 2009 ¶¶ 66–73, 88–106, 108–109); *see also id.* at 7–9 (asserting that the differences in FS-40 in technical data sheets and FS-40 in Goss matter because they show the lack of reliability in Ms. Borgese's ranges and that Petitioner fails to

meet its inherency burden). Patent Owner asserts that “Petitioner here is not explaining what FS-40 or Blue Mountain (2) in Goss meant, but is instead improperly filling gaps as to the bulk density ranges of these materials which are not disclosed in Goss.” *Id.* at 4–5 (citing Ex. 2009 ¶¶ 89–95). Patent Owner further contends that Petitioner cannot “simply assume” a bulk density range for the clays and that Petitioner ignores that Dr. Johnston provides testimony that one of ordinary skill in the art would not conclude that the clays have the ranges Ms. Borgese uses in her calculations. *Id.* at 5–7 (citing Ex. 2009 ¶¶ 66–73, 88–106, 108–109). Patent Owner also continues to assert that the technical data sheets are hearsay, fail to fall under any hearsay exception, and should be excluded. *Id.* at 13–17.

(2) Discussion

We begin by addressing two preliminary issues. First, both parties seem to assume that to meet the 47% surface area limitation, the detailed, nine-step process described in the ’397 patent specification must be followed. *See* Pet. 6–16 (describing nine-step process it follows in the Petition). In addition, Patent Owner does not argue that Petitioner fails to follow the process set out in the ’397 patent or makes any errors in calculations. *See* PO Resp. 16–33. Accordingly, we need not resolve any potential claim construction issue as to whether the claims require some or all of the process described in the specification to calculate the claimed external surface area, or decide whether Petitioner adequately followed the correct procedure.

Second, we address our understanding of the nature of Petitioner’s challenge. Patent Owner repeatedly asserts that Petitioner must show that Goss inherently discloses the 47% surface area limitation and inherently

discloses the disputed bulk density ranges, and Petitioner appears to assert that Goss anticipates under a traditional anticipation approach or an inherency approach. *See* PO Resp. 2, 16, 32–33; Pet. 28 (arguing that “Goss discloses” the 47% surface area limitation); Pet. Reply 3–11; Tr. 8:26–9:11 (Petitioner’s counsel arguing that Goss expressly and inherently satisfies the 47% surface area limitation). Petitioner relies in part on *In re Baxter Travenol Labs*, 952 F.2d 388 (Fed. Cir. 1991), which found a claim anticipated because one of ordinary skill in the art would “understand and infer” that a product in the prior art reference would have been made with a certain material even though the reference contained no express disclosure of the material and extrinsic evidence was necessary to explain what the anticipatory reference taught. *Id.* at 390 (finding anticipation referring to inherency); Pet. Reply 3–4 (citing *Baxter*).

We read Petitioner’s challenge as consistent with the approach in *Baxter* because Petitioner relies on extrinsic evidence (i.e., expert testimony interpreting documents) to show what one of ordinary skill in the art would understand and infer upon reading Goss. *See* Pet. 21–23, 28; Pet. Reply 3–11; Ex. 1003 ¶¶ 82–87, 117; PO Sur-reply 4–5 (arguing that *Baxter* does not apply). We do not see the bright line distinction between Petitioner’s approach and the inherency standard that Patent Owner suggests because, as Petitioner asserts, the same evidence can satisfy both standards. Tr. 8:26–9:11. Extrinsic evidence such as that Petitioner relies on here may be used to shed light on what a prior art reference means to one of ordinary skill in the art and that “such reliance on extrinsic evidence is proper in an inherency analysis.” *Monsanto Tech. LLC v. E.I. DuPont de Nemours & Co.*, 878 F.3d

1336, 1345 (Fed. Cir. 2018) (citing *Baxter* and 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”).

Petitioner argues that Goss’s FS-40 and BL(2) clays necessarily fall within the ranges Petitioner uses and its calculations show that the 47% surface area limitation will be met under those circumstances, not that Goss’s FS-40 and BL(2) clays merely *may* fall within the ranges Petitioner uses or that the 47% surface area limitation *may* be met for some of the bulk densities within that range. Pet. 21–23, 29–30, 35–36, 42–46. As a result, we do not see the outcome turning on whether we apply the approach used in *Baxter* or the inherency approach Patent Owner references.⁴

Turning to the merits of the parties’ dispute, we first address the persuasiveness of Petitioner’s arguments and evidence. Petitioner relies heavily on Ms. Borgese’s testimony, a chemical engineer with “firsthand experience in animal litter Process Development and Product Development creating animal litter from raw materials.” Ex. 1003 ¶¶ 3–4. Ms. Borgese has experience working with bentonite and fillers, and has validated test methods related to “particle size distribution, bulk density, moisture, [and] clump strength.” *Id.* ¶ 4. She also “used a variety of processing methods to produce animal litter” and is a named inventor on three animal litter patents. *Id.* Patent Owner does not dispute Ms. Borgese’s qualifications, does not

⁴ As to the whether Goss inherently discloses the 47% surface area limitation, Patent Owner does not dispute that Goss inherently discloses the limitation *if* Petitioner’s bulk density ranges are correct. See PO Resp. 15–33.

argue that she lacks firsthand experience that would enable her to testify as to the properties of the bentonite clays and litters at issue in this case, or otherwise dispute that she meets the parties' agreed-upon definition of a person of ordinary skill in the art. Pet. 4–5; PO Resp. 14. That definition presumes “experience in animal litter process development” and “familiarity with the composition and chemistry of various clays used in animal litter (including sodium bentonite).” Pet. 4–5. We find Ms. Borgese's education and first-hand experience in animal litter process development, including experience with bentonite, sufficient to testify credibly as to the known bulk densities of the bentonite clays at issue in the case.

As to Goss's FS-40 sodium bentonite clay made by Wyo-Ben, Ms. Borgese opines that the range of bulk density for the material in Goss is between 58–64 lb/ft³ based on Wyo-Ben's own technical data sheets from 1999 and 2002, which “describe the same (or similar) FS-40 (‘sodium bentonite’) composition.” Ex. 1003 ¶¶ 82–83, 106, 117; Pet. 21–22, 35. Then, in an effort “to be conservative in [her] analysis,” Ms. Borgese uses a broader range of 55–65 lb/ft³ for Goss's FS-40 in her calculations. Ex. 1003 ¶ 117. Even when pushing her assumptions in directions that would result in the lowest possible external surface area percent for sodium bentonite, all of the calculations across the full range of potential bulk densities still meet the 47% surface area limitation. *Id.* ¶¶ 117–122; Pet. 43–46. Based on our review of the arguments and evidence, we find Ms. Borgese's testimony as to the range of Goss's FS-40 bulk density credible and persuasive.

As to Goss's Blue Mountain (2) non-swelling clay (BL(2)), Ms. Borgese opines that the range of bulk density for the Blue Mountain non-

swelling clay in Goss is between 35–47 lb/ft³. Ex. 1003 ¶¶ 84–87; Pet. 22–23, 35. Ms. Borgese bases her opinion on the ’397 patent’s description of known bulk density of non-swelling clays, including Blue Mountain RVM clay, at the time the provisional application that led to the ’397 patent was filed in 2011. Ex. 1003 ¶¶ 84–87.

The ’397 patent supports Ms. Borgese’s opinions by describing the calcium bentonite it uses as having a bulk density within the range of 35–47 lb/ft³, and the Examples in the ’397 patent specification use calcium bentonite with densities between 37.1 and 46.22 lb/ft³. Ex. 1001, Examples 3–25, 34, 36–43, 9:29–31; Ex. 1003 ¶¶ 87, 106. The ’397 patent uses the terms “calcium bentonite” and “Blue Mountain RVM” interchangeably in several instances, supporting Ms. Borgese’s reliance on the data the ’397 patent provides as tied to Blue Mountain RVM. *See, e.g.*, Ex. 1001, 15:63–64 (referring to “Blue Mountain RVM clay (calcium bentonite)”), 16:47–49 (same), Examples 3–25, 34, 36–43. Ms. Borgese states that the BL(2) clay in Goss and the Blue Mountain RVM clay described in the ’397 patent have “generally the same chemical and physical characteristics because they are both clays mined and processed by Oil-Dri [i.e., Patent Owner] in the Blue Mountain region of Mississippi,” where Patent Owner has mined and processed Blue Mountain clays since 1989. Ex. 1003 ¶ 86 (citing Ex. 1019, 28). When performing her calculations to determine whether Goss taught the 47% surface area limitation, Ms. Borgese used BL(2) bulk density values that would tend to minimize the external surface area of sodium bentonite, and the results still showed that Goss met the limitation under those conditions. *See* Ex. 1003 ¶¶ 117–122; Pet. 43–46. Based on our review of

the arguments and evidence, we find Ms. Borgese's testimony credible and persuasive.⁵

Patent Owner makes a number of arguments, but we do not find them persuasive enough to undermine Petitioner's showing based on Ms. Borgese's analysis. Patent Owner's primary argument stems from its assertion that the bulk densities vary depending on a number of variables and that Ms. Borgese bases her ranges on documents, the technical data sheets for FS-40 and the '397 patent for BL(2), that have bulk densities that are not the "same" as the bulk densities for FS-40 and BL(2) in Goss due to the passage of time, differences in where the clay was mined, how the clay was processed, and how the bulk density was measured. *See* PO Resp. 18–19, 21–33; PO Sur-reply 2, 5–9. We do not view Petitioner's challenge as based on the premise that the FS-40 clay referenced in the technical data sheets and Blue Mountain clay in the '397 patent are the exact same as the FS-40 and BL(2) clays in Goss, but instead the clays and their bulk densities are similar enough that they will fall within the bulk density ranges Petitioner uses in its calculations. *See* Pet. 21–23, 68; Pet. Reply 6–7, 10. As a result, Patent Owner's repeated assertions that the clays or their properties are not the "same" or processed "exactly the same" fail to engage

⁵ Patent Owner suggests that Petitioner fails to meet the inherency standard because Ms. Borgese uses the term "potential" when describing the bulk density range of BL(2). *See* PO Resp. 32 (citing Ex. 1003 ¶ 117). We do not read Ms. Borgese's opinion in the same manner. Instead, we read the reference to "the potential bulk density range of BL(2), 35–47 lbs/ft³" as referring to any bulk density within that range, not that there is only the mere potential that the bulk density may fall within that range. *See* Ex. 1003 ¶ 117.

Petitioner's argument that the bulk densities were at least similar, such that that they fall within the ranges Petitioner uses. *See, e.g.*, PO Resp. 4, 21–24, 30–31; Ex. 2009 ¶¶ 97–98 (Dr. Johnston limiting opinion to whether the clays are the “same”).

As an example, when asked about the potential differences in bulk density between Goss's filing date in 1997 and the 1999 technical data sheet, Ms. Borgese states that “[b]entonite clays have not changed significantly in a period of two years.” Ex. 2008, 24:7–15; *see also* Ex. 1003 ¶¶ 202–203 (opining that “modest difference in particle-size distribution between FS-40 disclosed in Goss [and] . . . the FS-40 Information Sheet '99 only minimally impacts the bulk density”). Given Ms. Borgese's personal experience making animal litters and using bentonites, we view her testimony as credible absent some evidence that any differences in bulk density would fall outside the ranges she uses. Patent Owner provides no such evidence. Nearly all of Patent Owner's evidence goes to whether the clays and bulk densities would be the exactly the “same” in Goss as in the sources that Ms. Borgese relies on, and do not address how similar the bulk densities would be and do not attempt to establish that there are bulk densities for Goss's FS-40 and BL(2) clays that would fall outside the ranges Ms. Borgese uses. In the rare instances where Patent Owner does argue that the bulk densities would not be similar, or would not fall within Dr. Borgese's ranges, Patent Owner fails to cite any evidence to support the assertion. *See* PO Resp. 23, 32–33.

Even if we found Dr. Johnston's testimony generally credible on the point that bulk densities *may* differ across time even when mined and

processed by the same company, his testimony and Patent Owner's related arguments are insufficiently specific to undermine Ms. Borgese's (and Petitioner's) credible assertion that the differences would be too minimal to have an impact on Petitioner's allegation that the ranges Ms. Borgese uses are reliable and Goss discloses the 47% surface area limitation. Patent Owner and Dr. Johnston did not argue, for example, that the ranges Ms. Borgese uses were incorrect by providing evidence of any FS-40 or BL(2) clay having a density outside the range she uses such that we could infer that the 47% surface area limitation would not be met. The absence of any bulk density data that undermines Ms. Borgese's ranges is especially striking here. Patent Owner owns not only the '397 patent, but also owns Goss, and Mr. Goss himself is an inventor on both patents. *See* Ex. 1001, codes (71), (72); Ex. 1005, codes (73), (75). Patent Owner also mines and processes the BL(2) clay at issue here. Ex. 1003 ¶¶ 86–87. If any party could obtain documentation or witnesses attesting to the actual bulk density of the materials used in Goss, or produce any evidence of a bulk density outside the ranges Ms. Borgese uses, it would seem to be Patent Owner. The lack of any such evidence or testimony showing any bulk densities outside the ranges Ms. Borgese uses to interpret Goss, where Patent Owner owns Goss and supplies one of the clays at issue, reinforces the credibility and reliability of the ranges she uses.⁶

⁶ Although we do not rely on allegedly new evidence Petitioner offers with its Reply, we note that Petitioner introduces evidence that Patent Owner asserted in a patent infringement action involving Goss that Goss's first embodiment was made using a Blue Mountain RVM clay with similar particle sizes to both Goss's BL(2) clay and the Blue Mountain RVM clay in

We disagree with Patent Owner's suggestion that finding in Petitioner's favor on this issue amounts to shifting the burden to Patent Owner. *See* PO Sur-reply 2, 8 n.2. As noted in the legal standards section above, Petitioner bears the burden of proving unpatentability, and that burden never shifts to Patent Owner. *See Dynamic Drinkware*, 800 F.3d at 1378. Patent Owner was not required to show bulk density data outside the ranges Petitioner uses, or do anything specific in its Response given that Petitioner bears the ultimate burden. But where, as here, we find the evidence in the Petition persuasive and backed by credible expert testimony as to the bulk densities of Goss's components, it was incumbent upon Patent Owner to do more than make the arguments it did against Ms. Borgese's analysis. Finding in Petitioner's favor merely reflects our view of the persuasiveness of Petitioner's argument and evidence and the failure of Patent Owner's arguments to adequately undermine that showing; finding in Petitioner's favor here did not shift the burden to Patent Owner to prove patentability.

We have considered Patent Owner's remaining arguments, but find them unpersuasive. Patent Owner disputes whether Petitioner properly uses the bulk density data to explain what Goss discloses to one of ordinary skill

the '397 patent. *See* Pet. Reply 10–11 (citing Ex. 1001, Fig. 18; Ex. 1029 ¶ 9); PO Sur-reply 11. Although the document does not discuss bulk density data, the similar particle sizes underscore the similarity between the Blue Mountain RVM in the '397 patent and the BL(2) of Goss, and shows Patent Owner's ability to obtain evidence as to the details of Goss's components when helpful to Patent Owner. *See* Ex. 1029 ¶¶ 6–11 (Patent Owner relying on March 1997 memos providing details of clay properties as part of Patent Owner's assertion of conception and reduction to practice of Goss's claims).

in the art and contends that Petitioner improperly uses extrinsic evidence to fill gaps in Goss. *See* PO Sur-reply 4–5. We disagree with this position. We credit Ms. Borgese’s testimony that Goss’s FS-40 and BL(2) clays were known in the prior art and that one of ordinary skill in the art would be familiar with their properties, including their bulk densities, and her opinions address that issue and rely on extrinsic evidence to do so without improperly going beyond Goss’s teachings. *See* Ex. 1003 ¶¶ 64, 82–87, 106. In other words, Petitioner relies on Ms. Borgese’s testimony and extrinsic evidence to show what one of ordinary skill in the art would have understood from Goss’s disclosure, including known bulk density properties of its clays, not to combine Goss’s disclosure with that extrinsic evidence or improperly fill gaps in Goss’s disclosure. *See* Pet. 21–23, 28–46; *see also Baxter*, 952 F.2d at 390–91 (rejecting argument that extrinsic evidence was improperly used to expand, rather than explain, what a reference discloses in an anticipation analysis).

Patent Owner seeks to exclude the technical data sheets that Ms. Borgese relies on (Exhibits 1018 and 1024), but the effort lacks procedural and substantive merit. Patent Owner’s argument in its Patent Owner Response describes the documents as “[i]nadmissible” without seeking any specific relief, but Patent Owner’s Sur-reply makes clear that Patent Owner seeks exclusion. *See* PO Resp. 20; PO Sur-reply 13. While Patent Owner seeks to exclude these documents, it fails to follow our rules applicable to such efforts. Our rules require objections to evidence to be filed within specific timeframes, and a “motion to exclude evidence must be filed to preserve any objection.” 37 C.F.R. § 42.64(c). In addition, the “motion

must identify the objections in the record in order and must explain the objections.” *Id.* Patent Owner failed to file a separate “motion” or even refer to its hearsay arguments as a “motion” despite the fact that it seeks to exclude evidence. PO Resp. 20. Nor did Patent Owner “identify the objections in the record” in support of its “motion.” *Id.* In addition, Patent Owner fails to cite any authority that permits what amounts to a motion to exclude within the confines of the merits briefing, which forced Petitioner to devote space in its merits brief to opposing the motion to exclude. *See id.*; Pet. Reply 19–23. Under these circumstances, we deny the motion as procedurally improper. In addition, even if we reached the merits, we would not exclude the documents or Ms. Borgese’s opinions based on them given that she reasonably relied on the technical data sheets as reliable sources of bulk density data provided by Wyo-Ben, the manufacturer of the clays in question. *See* Pet. Reply 22–23; Ex. 1003 ¶¶ 82–83.

Patent Owner argues that to determine bulk density of a clay, the “loose-fill” method must be used and the technical data sheets cannot be relied upon by Ms. Borgese because they fail to disclose their measurement methodology. PO Resp. 26–28. As Petitioner points out, the ’397 patent itself reports some bulk densities without specifying how they were measured and Ms. Borgese opines that the applicable ASTM standard allows for two different types of measuring techniques, suggesting that no single test must be used to measure bulk density. *See* Pet. Reply 17–18 (citing Ex. 1001, Figs. 12–33; Ex. 1017, 20–42; Ex. 1030, 12:6–13:3; Ex. 2008, 60:5–13). However, even if the ’397 patent *requires* the “loose-fill” method of measuring bulk densities, Ms. Borgese’s testifies that “[w]hen those skilled

in the art refer to bulk density, they refer to loose bulk density” and “when I see bulk density written on a technical information sheet for particles, that it is referring to a loose bulk density.” Ex. 2008, 26:4–16, 27:13–28:5. In other words, when one of ordinary skill in the art sees a document such as the technical data sheets here that do not specify a method of measuring bulk density, that person assumes that the loose-fill method Patent Owner now insists upon was used. *See id.*; *see also* Pet. Reply 18. Patent Owner does not provide evidence or testimony undermining this testimony, and we see no error in Ms. Borgese’s reliance on technical data sheets that do not specify how the bulk densities were measured. *See* PO Sur-reply 7–9.

Patent Owner also suggests that Petitioner’s arguments lack merit because Ms. Borgese’s analysis relies in part on data from the challenged ’397 patent. *See* PO Resp. 28. As Petitioner notes, however, there is nothing improper about using data found in the ’397 patent to help establish what one of ordinary skill in the art would have understood about the properties of Goss. Pet. Reply 9 n.3 (asserting that “additional references ‘may be used to interpret the allegedly anticipating reference and shed light on what it would have meant to those skilled in the art at the time of the invention,’ *Ciba-Geigy Corp. v. Alza Corp.*, 68 F.3d 487, *2 (Fed. Cir. 1995) (citation omitted), and any ‘extrinsic evidence need not antedate the critical date of the patent at issue,’ *Monsanto Tech. LLC v. E.I. DuPont de Nemours & Co.*, 878 F.3d 1336, 1345 (Fed. Cir. 2018)”). It makes even more sense to use the ’397 patent to interpret the properties of materials in Goss given that Patent Owner owns both Goss and the ’397 patent and Mr.

Goss is an inventor on each patent. *See* Ex. 1001, codes (71), (72); Ex. 1005, codes (73), (75).

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

c. “wherein the litter has a bulk density less than about 58 lb/ft³”

This limitation appears in independent claim 1 (and several dependent claims), but not independent claim 7. Ex. 1001, claims 1, 7. Petitioner argues that Goss’s litter in Sample N has a bulk density “less than about 58 lb/ft³.” Pet. 48–50. Petitioner contends that Goss’s Sample N consists of 50% by weight FS-40 and 50% by weight BL(2). *Id.* at 48. As discussed above, Petitioner asserts that FS-40 “has, conservatively, a bulk density between 55–65 lb/ft³” and BL(2) “has a bulk density range of 35–47 lb/ft³.” *Id.* at 48 (citing Ex. 1003 ¶¶ 82–87, 106, 117). Using these ranges, Petitioner argues that “a Skilled Artisan can generally estimate the bulk density of the composition as a whole.” *Id.* at 49 (citing Ex. 1003 ¶ 130). Petitioner supports its argument by providing a calculation for the possible ranges of bulk densities of the individual components present in Goss’s Sample N and determines that at the highest range of bulk densities for both components (65 lb/ft³ for FS-40 and 47 lb/ft³ for BL(2)) the resulting composition would have a bulk density of 56 lb/ft³. *Id.* at 49–50 (citing Ex. 1003 ¶ 141). Petitioner further calculates that if the smaller particles in the composition, FS-40, made up an additional 20% of a given sample, the bulk density is 57.8 lb/ft³, which is still less than the claimed 58 lb/ft³. *Id.*

Patent Owner argues that Petitioner fails to demonstrate that Goss's Sample N has a bulk density less than about 58 lb/ft³. PO Resp. 33–35. Patent Owner argues that Petitioner's calculations are flawed for several reasons. First, Patent Owner argues that Petitioner's arguments are merely estimates of the bulk density based on unreliable bulk density data for Goss's FS-40 and BL(2), essentially relying on the arguments Patent Owner made with respect to the 47% surface area limitation that we ultimately found unpersuasive for the reasons provided above. *Id.* at 33–34 (citing Ex. 1009 ¶¶ 107–109).

Second, Patent Owner argues that Ms. Borgese acknowledges that “when materials of different particle size distributions are combined, a new bulk density, that is *not necessarily* the average of the bulk densities of the individual components results” due to particle size differences that “impacts the interactions between the particles and determines how the particle pack together.” PO Resp. 34 (quoting Ex. 1003 ¶ 131). Patent Owner contends that in its particle packing analysis, Petitioner improperly assumes that the particles are perfect spheres. *Id.* (citing Ex. 1003 ¶ 137). According to Patent Owner, the '397 patent does not assume the particles are perfect spheres when using its loose-fill bulk density test. *Id.* (citing Ex. 1001, 12:64–13:42). Patent Owner further contends that Ms. Borgese applies this flawed assumption to a “Face Centered Cubic (FCC) packing” analysis, which “has no application here because FCC assumes all particles *have the same size* and are perfect spheres.” *Id.* at 34–35 (citing Ex. 2009 ¶¶ 111–112). Patent Owner also takes issue with Ms. Borgese adjusting the bulk

density by 20% to show that her calculation for the overall bulk density “is reasonable.” *Id.* at 35 (citing Pet. 49–50).

In its Reply, Petitioner argues that “[t]he bulk density of Sample N would have been known to result from an even mass split of its components (Sample N is 50%-by-weight FS-40 and 50%-by-weight Blue Mountain (2)), and even if the split skewed dense, it would not exceed the claimed 58 lb/ft³.” Pet. Reply 12 (citing Pet. 49–50; Ex. 1003 ¶¶ 140–141). Petitioner contends that “Dr. Johnston, never challenges Ms. Borgese’s conclusion that a Skilled Artisan with knowledge of the bulk densities of FS-40 and Blue Mountain (2) could reasonably determine the bulk density of Sample N as a whole” and “that the bulk density of Sample N would be even mass split, and would not exceed 57.8 lb/ft³.” *Id.* (citing Pet. 49; Ex. 1003 ¶¶ 107–114, 130, 141). According to Petitioner, “these omissions are fatal,” and Patent Owner “can point to no evidence in support of its assertion” that Ms. Borgese’s analysis is “arbitrary.” *Id.* (citing PO Resp. 35). As to the FCC packing analysis, Petitioner contends that Patent Owner ignores its substance and its extremely conservative approach. *Id.* at 13 (citing Ex. 1003 ¶ 137).

In its Sur-reply, Patent Owner generally repeats its assertions as to Petitioner’s bulk density ranges for FS-40 and BL(2) as the premise for the litter bulk density limitation at issue here. *See* PO Sur-reply 9–11. Patent Owner does not respond directly to any of the arguments Petitioner made in its Reply. *See id.*

Based on our review of the arguments and evidence, Petitioner provides persuasive evidence, supported by a detailed and credible analysis from Ms. Borgese, that the overall density of Goss’s litter falls below the 58

lb/ft³ required by the limitation even when using the maximum bulk densities for each component. *See* Pet. 48–49; Ex. 1003 ¶¶ 130, 141. Ms. Borgese stepped through the process and the conservative values she used to calculate the overall litter density. *See* Ex. 1003 ¶¶ 130–141.

Patent Owner’s arguments do not undermine Petitioner’s showing here. Patent Owner largely relies on its previous arguments based on the bulk density ranges Ms. Borgese uses from her prior analysis. *See* PO Resp. 33–34; PO Sur-reply 9–11. As discussed above, we find Ms. Borgese’s analysis credible and persuasive on those points. Patent Owner does not set forth its own overall litter bulk density calculation using those bulk density ranges, or explain adequately why, if Ms. Borgese’s bulk density ranges are correct, her calculation of the litter bulk density would not fall under 58 lb/ft³.

Patent Owner raises two arguments that potentially could impact Petitioner’s calculations, but Patent Owner fails to explain how or whether the impact would tend to increase the litter density and tend to show that Goss does not disclose the limitation. For example, Patent Owner argues that Petitioner improperly assumes the particles are spheres, but does not explain how that impacts Petitioner’s calculations. PO Resp. 34. Moreover, Goss discloses that the particles in its components “preferably are rounded in shape,” and the ’397 patent states that “[t]he particle count is also based on a simplified assumption that all particles are spherical.” Ex. 1005, 4:5–8; Ex. 1001, 16:38–40. Patent Owner does not explain why the same assumption used in the ’397 patent for one calculation would be inapplicable to a different calculation. PO Resp. 34–35. Nor does Patent Owner address that

Goss specifically identifies its particles as “rounded in shape.” *Id.* We pointed these flaws out in our Institution Decision, but Patent Owner fails to address them in its argument. *See* Inst. Dec. 26–27; PO Resp. 34–35.

Patent Owner also argues that Ms. Borgese’s FCC packing analysis contains flaws, but does not respond to Petitioner’s explanation that Patent Owner’s analysis “ignores its substance” and that FCC analysis represents a very conservative understanding of “whether there would be an additive effect when two materials are mixed.” PO Resp. 34–35; Pet. Reply 13 (citing Ex. 1003 ¶¶ 137, 140). We do not find Patent Owner’s arguments sufficient to undermine Ms. Borgese’s testimony on this point given Patent Owner’s lack of response, and even if the FCC analysis contains flaws, Patent Owner fails to show how those flaws would impact Ms. Borgese’s calculation of the overall litter density calculations and that the result would fall outside the scope of the limitation.

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/ft³.”

d. “20% to 55% by weight of a non-clumping filler material”

Petitioner argues that Goss’s Sample N litter discloses a “litter” “comprising” “20% to 50% by weight of a non-clumping filler material” because Sample N describes a litter having “50% by weight FS-40 and 50% by weight BL(2),” as discussed above. Pet. 47. Petitioner also contends that Goss’s BL(2) clay meets the definition of a “non-clumping filler” because Goss describes it as a non-swelling clay and contrasts its inability to clump with the swelling and clumping sodium bentonite FS-40 clay. *See id.* at 47–

48 (citing Ex. 1003 ¶¶ 125–126; Ex. 1005, 1:41–42, 4:41–45). Patent Owner does not address or dispute Petitioner’s assertion that Goss discloses litters having non-clumping filler material within the weight range required by this limitation. We agree with Petitioner that Goss describes its BL(2) clay as a non-clumping filler material and that Sample N discloses using 50% by weight of BL(2) in a litter. *See id.* We find that Petitioner proves by a preponderance of the evidence that Goss discloses a litter comprising “20% to 50% by weight of a non-clumping filler material.”

e. “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”

Petitioner argues that Goss’s litter forms at least one clump when exposed to a wetting agent because “Goss reports Sample N has a clump strength score of ‘1’ after 30 seconds and ‘1’ after 24 hours after an average of three clump-strength tests” and “a clump-strength score of ‘1’ is the highest possible clump-strength score and describes a clump that is ‘substantially intact on being dropped.’” Pet. 50–51 (citing Ex. 1003 ¶ 144; Ex. 1005, 6:35–38, Table III). Petitioner further contends that the water used in Goss for the clumping test satisfies the “wetting agent” aspect of the limitation. *Id.* at 51 (citing Ex. 1001, 6:7–10). As to the “mechanically separable from unwetted litter for disposal” aspect of the limitation, Petitioner argues that the same clump tests Goss describes show that clumps are “substantially intact” after being dropped, which meets the “mechanically separable” limitation. *Id.* at 51–52 (citing Ex. 1003 ¶¶ 146–148; Ex. 1005, 3:6–8, 5:34–40, 5:40–45, 6:1–2, Table III). Patent Owner does not address or dispute Petitioner’s assertion that Goss discloses this

limitation. We agree with Petitioner that Goss describes a litter in Sample N that forms at least one mechanically separable clump when exposed to a wetting agent. *See id.* We find that Petitioner proves by a preponderance of the evidence that Goss discloses a litter meeting the limitation 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.”

f. 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 anticipates independent claims 1 and 7.

3. Dependent Claims 3–6, 8, 10, 11, and 13–16

Petitioner argues that Goss anticipates dependent claims 3–6, 8, 10, 11, and 13–16. Pet. 4, 54–63. For each limitation in these claims, Petitioner points to the relevant aspects of Goss that discloses the limitation and relies on Ms. Borgese’s analysis for support. *See* Pet. 54–63. 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. 15–35. We find Petitioner’s arguments and evidence

as to dependent claims 3–6, 8, 10, 11, and 13–16 persuasive, and adopt Petitioner’s argument and evidence as our own.⁷ *See* Pet. 54–63.

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, 11, and 13–16 and that Goss anticipates those claims.

E. Obviousness Based on Goss

Petitioner argues that claims 2, 9, 12, and 17–19 would have been obvious based on Goss. Pet. 4, 63–70. Patent Owner raises several arguments against this challenge as to claims 2, 9, and 17, but does not address the other claims subject to this challenge. *See* PO Resp. 35–40.

1. Claims 2, 9, and 17

Claims 2, 9, and 17 all recite “wherein the litter has a bulk density less than about 47 lb/ft³.” Ex. 1001, claims 2, 9, 17. Petitioner argues that one of ordinary skill in the art would understand “that the bulk densities used to determine whether Goss’s Sample N satisfied the ‘bulk density less than about 58lb/ft³’ element” in its analysis of claim 1 “are relatively

⁷ 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 12, 9 (“Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.”).

conservative” because Ms. Borgese’s analysis used broad, conservative ranges for the bulk density of Goss’s FS-40 (55–65 lb/ft³) and Goss’s BL(2) (35–47 lb/ft³). Pet. 67 (citing Ex. 1003 ¶¶ 84–87, 117). Petitioner contends that one of ordinary skill in the art would also recognize that each component could have a bulk density on the low end of the range, at 58 lb/ft³ for FS-40 and 35 lb/ft³ for BL(2). *Id.* at 68 (citing Ex. 1001, 9:29–30; Ex. 1003 ¶ 202). Petitioner further asserts that one of ordinary skill in the art “would have been motivated to prepare Goss Sample N using examples of FS-40 and BL(2) on the low end of the bulk density ranges . . . because before the effective filing date of the [’]397 Patent, those working in the animal litter field were already creating litters with ‘sodium bentonite’ (such as FS-40) and components that lowered the overall bulk density of the composition to ensure that the litters could be transported more cost-effectively.” *Id.* at 69 (citing Ex. 1003 ¶ 204). According to Petitioner, applying this teaching to the low end of the bulk density ranges in Goss’s FS-40 and BL(2) used in Sample N will result in a litter density of 46.5 lb/ft³ (i.e., less than the claimed 47 lb/ft³). *Id.* at 69–70 (citing Ex. 1003 ¶¶ 206–207). Petitioner also argues that “[p]reparing this iteration Goss Sample N would require nothing more than routine skill” and “Sample N would function as expected because it is nothing more than a combination of known components” at least similar to combination of the same components in the prior art that function as expected. *Id.* at 70 (citing Ex. 1003 ¶ 207).

In addition to the arguments Patent Owner raises as to the independent claims, Patent Owner further argues that Petitioner’s analysis relies on unfounded assumptions and impermissible hindsight. PO Resp. 36–40.

Patent Owner contends that none of the sample litters in the '397 patent discloses a bulk density of 35 lb/ft³ for Blue Mountain RVM, the low end of the bulk density range Petitioner uses in its calculations for Goss's BL(2). *Id.* at 37–38 (citing Ex. 2008, 39:21–23; 40:6–10; 40:17–22; Ex. 2009 ¶¶ 96–105; Pet. 69–70). Patent Owner asserts that the lowest bulk density for Blue Mountain RVM in the samples is 37.1 lb/ft³. *Id.* at 38 (citing Pet. 23). Patent Owner uses the 37.1 figure to calculate a litter bulk density of 47.6, above the claim limit of 47 lb/ft³. *Id.* at 38–39 (citing Ex. 2009 ¶ 113). Patent Owner acknowledges that the '397 patent also states that “the calcium bentonite used in a litter mixture may have a bulk density of 35–45 lb/ft³,” but argues that the statement does not mention Blue Mountain RVM specifically much less Goss's BL(2). *Id.* at 38 (citing Pet. 23, 29–30; Ex. 2009 ¶ 104).

Patent Owner further argues that Petitioner's modification “does not consider the impact of making these modifications on each component's particle size distribution and the external surface area calculation.” PO Resp. 39–40 (citing Ex. 2009 ¶ 114). According to Patent Owner, Petitioner incorrectly assumes that the particle size distribution remains the same at the low end of the bulk density ranges Petitioner uses, but the '397 patent shows that the bulk density varies as the particle size distribution varies. *Id.* at 40 (citing Ex. 1001, Figs. 21, 22; Ex. 2009 ¶ 114; Pet. 68 n.5).

In its Reply, Petitioner argues that the '397 patent directly supports its use of 35 lb/ft³ for Blue Mountain RVM because it describes “calcium bentonite” as including that value and the '397 patent consistently uses the term “calcium bentonite” interchangeably with “Blue Mountain RVM.” Pet.

Reply 14–16 (citing Ex. 1001, 9:29–31, 15:63–64, 16:47–49, Examples 3–25, 34, 26–44, 47; Ex. 1030, 8:11–15, 10:11–13, 11:6–8; Ex. 2008, 31:11–16, 38:14–21). Petitioner also contends that the '397 patent confirms this understanding by stating that its clays can vary in bulk density by 2 lb/ft³, which when applied to an example with a density of 37.1 lb/ft³ results in a density of 35.1. *Id.* at 16–17 (citing Ex. 1001, 9:34–49, Figs. 15, 18; Ex. 1003 ¶ 87; Ex. 2008, 40:17–41:11).

In its Sur-reply, Patent Owner repeats its arguments against Petitioner's use of the 35 lb/ft³ bulk density value for Blue Mountain RVM in the '397 patent. PO Sur-reply 11–12. Patent Owner also argues that Petitioner's Reply did not address Patent Owner's argument that Petitioner failed to consider the impact of using the lowest end of the bulk density range on particle size distribution and “present evidence to rebut Dr. Johnston's testimony.” *Id.* at 12–13 (citing Ex. 2009 ¶ 114; Pet. 68 n.5). According to Patent Owner, “[b]ecause both bulk density and particle size distribution are variables determinative of the external surface area calculation, changes to these values must be accounted for in an obviousness analysis, but Petitioner failed to do so.” *Id.* (internal citation omitted).

Claims 2, 9, and 17 ultimately depend from independent claims 1 (for claim 2) and 7 (for claims 9 and 17), with claims 1 and 7 each having the 47% surface area limitation. According to Patent Owner's argument that Petitioner fails to account for the impact of bulk density on particle size, even if one of ordinary skill in the art were motivated to use the 35 lb/ft³ bulk density value for Goss's BL(2) as Petitioner proposes to meet the limitations of claims 2, 9, and 17, that may result in a failure to meet the

47% surface area limitation. *See* PO Resp. 39–40 (citing Ex. 2009 ¶ 114). We addressed this argument in the Institution Decision and stated that the arguments “raise factual disputes best resolved after development of the record during trial.” Inst. Dec. 30. Patent Owner raises the same argument now, but Petitioner fails to directly respond to it in its Reply, instead focusing on the propriety of using the 35 lb/ft³ bulk density value. *See* Pet. Reply 14–17. The Petition appears to acknowledge the impact of particle size changes on bulk density in the context of Goss’s FS-40 clay, and argues that they will have minimal impact, but Petitioner does not direct us to any argument or evidence addressing the potential impact of choosing the 35 lb/ft³ bulk density for Goss’s BL(2) clay on particle size, and whether that would impact the surface area calculations in any way. *See* Pet. 68 n.5.

Without a substantive response to Patent Owner’s argument from Petitioner, we are not persuaded that Petitioner met its burden that Goss teaches a litter that meets the bulk density limitations of dependent claims 2, 9, and 17, while continuing to satisfy the 47% surface area limitation of the independent claims. Accordingly, we find that Petitioner fails to prove by a preponderance of the evidence that Goss renders any of claims 2, 9, or 17 obvious.

2. Claims 12, 18, and 19

Petitioner argues that dependent claims 12, 18, and 19 would have been obvious based on Goss. Pet. 63–66. For each limitation in these claims, Petitioner points to the relevant aspects of Goss that discloses the limitation and relies on Ms. Borgese’s analysis for support. *See id.* 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. 35–40. We find Petitioner’s arguments and evidence as to dependent claims 12, 18, and 19 persuasive, and adopt Petitioner’s argument and evidence as our own. *See* Pet. 63–66.

Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that Goss teaches or renders obvious all of the limitations of dependent claims 12, 18, and 19 and that Goss renders those claims unpatentable as obvious.

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 each of challenged claims 1, 3–8, 10–16, 18, and 19 is 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, 34, and 35. We do not consider the Revised Motion to Amend as to proposed substitute claims 25 and 33 because they seek to replace original claims 9 and 17 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 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 20–24, 26–32, 34, and 35 as respective substitutes for original claims 1, 3–8, 10–16, 18, and 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:⁸

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.

⁸ Underlined language reflects subject matter added to the original claims and strike-through indicates deletion.

wherein the litter has a bulk density less than about 58 lb/ft³, 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, 1.

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, 1.

The remaining proposed substitute claims depend directly or indirectly from proposed substitute claims 20 and 23. *See* RMTA App. A, 1–5.

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. 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)). 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. 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). 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 1329–1330 (citing *Wertheim*, 541 F.2d at 263–265). 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 18–19. Patent Owner asserts that proposed substitute claim 20, which unlike the other claims requires “a plant-based filler material,” does not add new matter because Example 27 in the specification provides the 55% sodium bentonite weight percentage and Examples 28–30 provide respective weight percentages of 65%, 70%, and 86%. RMTA 5–6 (citing Ex. 1002, 51–53; Ex. 2018, 349–351).⁹ With regard to proposed

⁹ We note that, to provide support for the proposed amendments, Patent Owner cites to the non-provisional application from which the ’397 patent

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%, namely 60%, 65%, and 70%. *Id.* at 5–6, 8, 10 (citing Ex. 1002, 33–37, 42–44, 46–47, 51–52; Ex. 2018, 331–333, 335, 337–338, 341–344, 349–350). Patent Owner also cites claims 31 and 33 of the '021 application to support the “55% to 80% by weight of sodium bentonite” range of proposed substitute claims 20 and 23. *Id.* at 8, 10 (citing Ex. 2018, 375–376).

Petitioner argues that the 55% to 80% weight range lacks written description support because “nowhere does the specification of the [']397 Patent describe, or even suggest, that range was ever contemplated to be an aspect of the disclosed invention.” Pet. Opp. RMTA 3 (citing Ex. 1031 ¶¶ 35–38). Petitioner also contends that none of the Examples or any other part of the '397 patent specification disclose such a range “or describe it as a feature of the invention.” *Id.* at 3–4 (citing Ex. 1001, 1:50–2:20). Petitioner asserts that the disparate Examples Patent Owner relies upon fail to disclose the claimed *range* as part of the invention, and other Examples falling outside the range suggest the opposite. *Id.* at 4–6. Petitioner also refers to other limitations in claims 20 and 23 with their own ranges, such as the 47% surface area limitation and particle size limitation in claim 23, and argues

issued, Application No. 16/679,743 (the '743 application), and the oldest non-provisional application to which the '397 patent claims priority, Application No. 13/524,021 (the '021 application). RMTA 5–15 (citing Ex. 1005; Ex. 2018). For ease of reference, we typically cite to the '397 patent.

that Patent Owner's cited Examples fail to show possession of the weight range in combination with the endpoints of those other ranges. *See id.* at 6–9.

As part of its argument, Petitioner contends that the specification lacks the necessary “blaze marks” that show possession of the claimed range, as evidenced by the presence of Examples that fall outside the claimed weight range but within the claimed 47% surface area range. Pet. Opp. RMTA 9–11. Petitioner also points to Examples falling within the claimed weight range but outside the claimed 47% surface area range, as well as two Examples that have the same 65% weight percent of sodium bentonite but surface area percentages falling within and without the claimed 47% range. *See id.* at 11 (citing Ex. 1001, Examples 4, 5). According to Petitioner, there are no “blaze marks” that tell one reading the '397 patent which Examples are considered a part of the invention and which are not because the “specification makes no distinction whatsoever between the types of litters that satisfy Patent Owner's substitute claims and those that do not.” *Id.*; *see also id.* at 12 (faulting Mr. Johnston's testimony for failing to explain how one reading the specification would “understand the invention is limited to litters having 55% to 80%-by-weight sodium bentonite”).

Patent Owner replies that one of ordinary skill in the art would reasonably discern that they contemplated the “55% to 80%” sodium bentonite weight percentage range as an aspect of their invention in view of the Examples within and bracketing that range, and the law does not require the specification to set forth the exact range claimed. PO Reply RMTA 1–3 (citing Ex. 2019 ¶¶ 32–51). Patent Owner contends that the Federal Circuit

eschewed bright line rules in *Wertheim* and *Indivior*, and that a claim will not be invalidated simply because the specification does not contain Examples explicitly covering the full scope of the claim. *Id.* at 3–4. Patent Owner further asserts that Examples having sodium bentonite weight percentages above and below the claimed range of “55% to 80%” do not undermine compliance with the written description requirement. *Id.* at 4. Patent Owner argues that the Examples cited by Petitioner outside the claimed weight range have a total external surface area for sodium bentonite that is less than 47%, include a filler material that is not plant-based (for substitute claim 20), or have no filler at all, and therefore merely all into the category of unclaimed litters. *Id.* at 4–5.

Patent Owner disagrees with Petitioner’s position that the specification must demonstrate an intent to limit the invention to litters including “55% to 80%” sodium bentonite and argues that the “blaze mark” analysis does not apply to this situation, where the claimed species is expressly described in the specification. *Id.* at 5–6. Patent Owner also contends that the specification supports other limitations in the claims, such as the 47% surface area limitation and particle size limitation, and need not provide an example that explicitly covers the full scope of the claim language. *Id.* at 6–8.

In its Sur-reply, Petitioner argues that given the failure of the specification to identify the claimed weight range as part of the “present invention,” the ’397 patent teaches that “the inventors considered any litter with at least 47% of its ‘total external surface area’ attributable to ‘sodium bentonite’ to be an aspect of their invention, *without regard for* whether the

‘sodium bentonite’ weight fell within the now-claimed ‘55% to 80% by weight’ range.” Pet. Sur-reply RMTA 1–2 (citing Ex. 1031 ¶¶ 35–36). Petitioner also contends that Patent Owner fails to address the proper legal standard aimed at determining whether the inventors contemplated the claimed weight range as an aspect of their invention, which results in a finding of no written description support because the specification does not even identify the endpoints of the range as significant or part of the invention. *Id.* at 2. Petitioner asserts that the specification’s description of specific weight percentages outside the claimed range that still meet aspects of the “present invention” and the failure of the specification to disclose any specific weight range underscore the lack of possession of the claimed weight range as part of the invention. *Id.* at 3–5; *see also id.* at 7–8 (arguing that Examples that meet the weight range limitation but fail to meet 47% surface area limitation fail to show possession of the full scope of the invention).

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 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) (“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* Pet. Opp. RMTA 7; Pet. Sur-reply RMTA 8; RMTA 4–15; PO Reply RMTA 1–6.

Second, the specification does not disclose a cluster of individual data points showing that the claimed range demarcates an approximate line between weight percentages of sodium bentonite that work well and those that do not work well. As Petitioner points out, 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. *See* Pet. Opp. RMTA 3; Pet. Sur-reply RMTA 1–2; 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).

Third, as Petitioner points out, the Examples in the specification do not support Patent Owner's argument because they show that using weight percentages of sodium bentonite outside the claimed range still lead to advantageous results, and use of some weight percentages of sodium bentonite within the claimed range do not meet other claim requirements. *See* Pet. Opp. RMTA 10–11; Pet. Sur-reply RMTA 4–5. For example, Examples 6, 23, 24, 26, 30, and 33 disclose litters falling outside the claimed weight percent range of sodium bentonite but satisfying the supposedly critical 47% surface area limitation. *See* Pet. Opp. RMTA 10 n.5; Ex. 1001, 18:40–35:53, Examples 6, 23, 24, 26, 30, and 33. Moreover, all but one of those Examples not only meet the 47% surface area limitation, they also show positive clump test results. *See* Ex. 1001, 5:45–57 (defining successful clump strength test results as having a value of less than or equal to 1.33 at any of a number of time periods); Examples 6, 23, 24, 30, and 33. The seemingly positive results obtained with litters falling outside the claimed weight percent undermines Patent Owner's assertion that the specification shows possession of an invention based on the claimed weight range.

On the other hand, other Examples show a failure to meet claim requirements even when using a litter meeting the weight percent range of sodium bentonite. Examples 4 and 5 use a weight percent within the claimed range (65%), but one example meets the 47% surface area limitation (Example 5 at 68%), while one does not (Example 4 at 46%). *See* Pet. Opp. RMTA 11; Ex. 1001, 17:30–18:37. In addition, Examples 7, 10, 15, and 17 use litters having sodium bentonite within the claimed weight range but do not meet the claimed 47% surface area for sodium bentonite: Example 7 has

a sodium bentonite weight content of 65%, with a sodium bentonite external surface area of 45%; 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 Ms. Borgese. *See* Pet. Opp. RMTA 3, 7–8, 10 n.5 (citing Ex. 1031). We find Ms. Borgese’s opinions credible based on her experience in the field and the manner in which her opinions track the disclosure of the ’397 patent. *See* Ex. 1031 ¶¶ 35–39; *id.* ¶ 36 (reviewing Examples in specification and concluding: “It is thus my opinion that a Skilled Artisan reading the patent would not understand the inventors to have possessed litters having a range of 55 to 80%-by-weight sodium bentonite as an aspect of their invention”).

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. *See* PO Reply RMTA 3 (citing *Nalpropion Pharms, Inc. v. Actavis Labs. FL, Inc.*, 934 F.3d 1344, 1348 (Fed. Cir. 2019)). 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. 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, 1. As to proposed substitute claim 23, as noted above, Patent Owner cites the Examples 27–29 for support. Patent Owner also cites Examples 11–13, 20, 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. 1002, 39–41, 45–46, 49–53, 56–57, 59–60; 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%).¹⁰ 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, 1. 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. As a result, the specification

¹⁰ Example 3, 65%; Example 5, 65%; Example 8, 70%, Example 11, 70%, Example 13; 65%, Example 16, 70%; Example 18, 65%; Example 20, 55%.

not only fails to support the claimed *range* of 55% to 80% by weight of sodium bentonite (or any range at all), it also fails to support 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).¹¹

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

¹¹ 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 proposed substitute claim 20’s sodium bentonite range 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, 1–5. 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 Unpatentability

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 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 claim 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 1–12; Pet. Sur-reply RMTA 1–8. 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 the 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.

CONCLUSION¹²

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 3–8, 10, 11, 13–16	102	Goss	1, 3–8, 10, 11, 13–16	
2, 9, 12, 17–19	103	Goss	12, 18, 19	2, 9, 17
Overall Outcome			1, 3–8, 10–16, 18, 19	2, 9, 17

¹² Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding, 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

Revised Motion to Amend Outcome	Claim(s)
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, 35
Substitute Claims: Not Reached	25, 33

ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 3–8, 10–16, 18, and 19 of the '397 patent are determined to be unpatentable;

FURTHER ORDERED that claims 2, 9, and 17 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.

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