

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MINIATURE PRECISION COMPONENTS, INC.,
Petitioner,

v.

EAGLE INDUSTRIES, INC.,
Patent Owner.

Case IPR2017-01403
Patent 8,205,592 B2

Before MICHAEL W. KIM, JAMES A. WORTH, and
RICHARD H. MARSCHALL, *Administrative Patent Judges*.

MARSCHALL, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Miniature Precision Components, Inc. (“Petitioner”) filed a Petition for *inter partes* review of claims 1–19 of U.S. Patent No. 8,205,592 B2 (Ex. 1002, “the ’592 patent”). Paper 1 (“Pet.”), 1. Eagle Industries, Inc. (“Patent Owner”) did not file a Preliminary Response. Upon consideration of the Petition, we instituted an *inter partes* review pursuant to 35 U.S.C. § 314, as to claims 1–19. Paper 8 (“Inst. Dec.”). More specifically, we instituted review to decide whether claims 1–12 are unpatentable as anticipated by Polytec¹; and (2) whether claims 1–19 are unpatentable as obvious over Polytec and Burr.²

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 11, “PO Resp.”). On May 4, 2018, pursuant to the Supreme Court’s decision in *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348 (2018), we issued an Order instituting on all grounds mentioned in the Petition, including whether claims 1–19 are unpatentable as obvious based on Polytec alone. Paper 15. We granted Patent Owner’s request to file a Supplemental Response to address this additional ground (Paper 16), and Patent Owner filed a Supplemental Response on June 1, 2018 (Paper 19, “PO Supp. Resp.”). Petitioner filed a Reply (Paper 21, “Reply”). On September 7, 2018, we held an oral hearing. Paper 28 (“Tr.”).

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has demonstrated,

¹ WO 2008/055806 A1 (published May 15, 2008) (Ex. 1006). We will cite to an English translation of Polytec provided by Petitioner. See Ex. 1007.

² U.S. Patent No. 3,487,134 (issued Feb. 8, 1965) (Ex. 1008).

by a preponderance of the evidence, that claims 1–19 of the ’592 patent are unpatentable.

A. Related Matters

Petitioner and Patent Owner state that there are no pending related matters. Pet. v; Paper 5, 1.

B. The ’592 Patent

The ’592 patent discloses a noise abatement “engine cover and method of making the same with a textured surface.” Ex. 1002, Abstract. The noise abatement cover includes a “textured, in-mold coated, high quality outer appearance with a core of medium density polyurethane.” *Id.* According to the Background section of the ’592 patent, plastic injection molded covers already in use as engine covers provide improved aesthetics, but inferior sound absorption. *Id.* at 1:18–19. In addition, foam products may provide improved sound absorption, but not a quality surface appearance. *Id.* at 1:26–27. The ’592 patent also states that designs prior to the ’592 patent “contain multiple parts or components for equivalent appearance and noise abatement performance.” *Id.* at 2:3–4. The disclosed invention purportedly provides both improved appearance and noise abatement, and employs a “preferred single piece construction.” *Id.* at 2:8–13.

Figure 1 of the ’592 patent is a top view of a noise abatement engine cover, and is reproduced below:

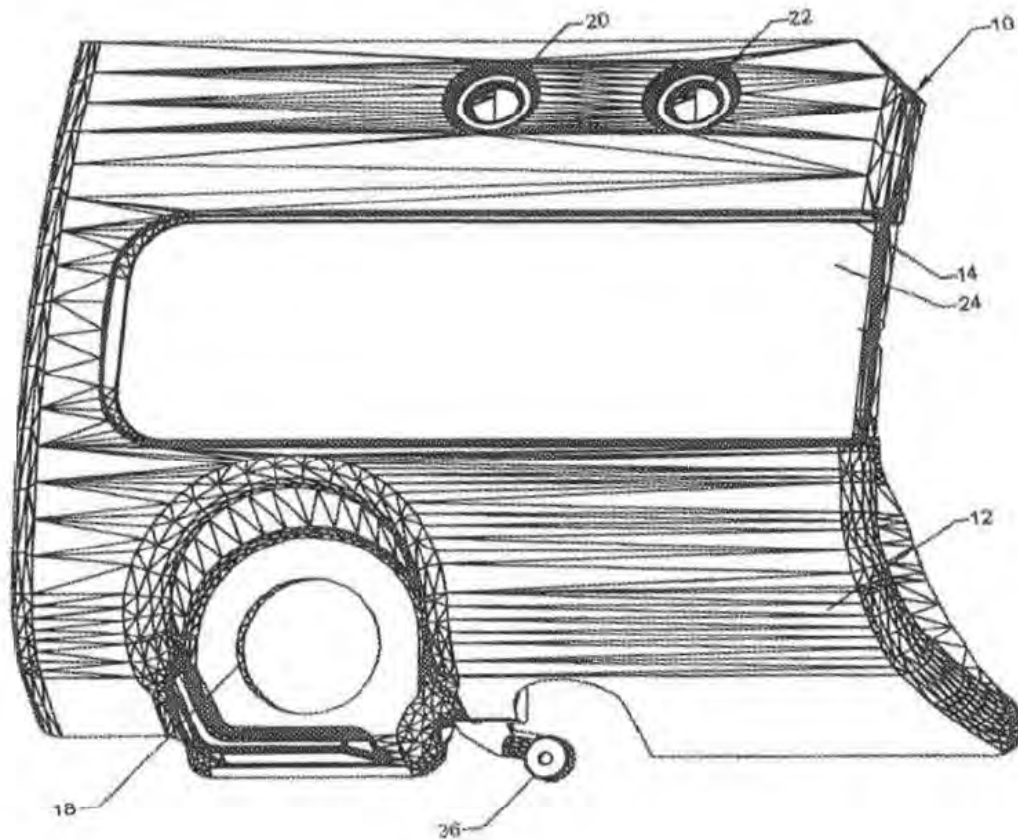


Fig. 1

As illustrated above, Figure 1 shows engine cover 10 including textured outer surface 12 with embedded coating 14. *Id.* at 3:7–8. Outer surface 12 “can receive its texture from [a] grained aluminum tool that forms part of the cavity during the molding process.” *Id.* at 3:11–13. Embedded coating 14 “can be an in-mold coating, such as urethane-based paint.” *Id.* at 3:13–15. Apertures 18, 20, 22 and attachment feature 36 help secure engine cover 10 to the engine. *Id.* at 3:25–29. Engine cover 10 includes a core of medium density foam, such as polyurethane. *Id.* at 3:21–22.

Of the challenged claims, claims 1, 9, and 13 are independent. Claim 1 is illustrative, and is reproduced below:

1. An exterior engine cover adapted to be used as an external cover of an engine comprising:
 - a core of the exterior engine cover being medium density polyurethane; and
 - a textured outer surface of the exterior engine cover with an embedded protective coating that is denser than the corewherein the outer surface exposed to the environment has a visible outer surface when installed.

Ex. 1002, 4:21–28.

C. Instituted Grounds of Unpatentability

Petitioner challenges claims 1–19 based on the following grounds (Pet. 3, 11, 49):

Reference(s)	Basis	Challenged Claims
Polytec	§ 102(b) ³	1–12
Polytec and Burr	§ 103(a)	1–19
Polytec	§ 103(a)	1–19

II. ANALYSIS

A. Principles of Law

To prevail in its challenge to Patent Owner’s claims, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, took effect on March 18, 2013. Because the application from which the ’592 patent issued was filed before that date, any citations to 35 U.S.C. §§ 102 and 103 are to their pre-AIA version.

A prior art document may anticipate a claim if it describes every element of the claimed invention, either expressly or inherently. *Husky Injection Molding Sys. Ltd. v. Athena Automation Ltd.*, 838 F.3d 1236, 1248 (Fed. Cir. 2016).

A claim is unpatentable under 35 U.S.C. § 103(a) 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 of the invention to a person having ordinary skill in the art. *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill

In determining the level of ordinary skill in the art, various factors may be considered, 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.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted).

Petitioner relies on the testimony of Dr. Robert Wagoner, who testifies that a person with ordinary skill in the art “is an engineer with a bachelor’s of science degree in materials, mechanical, or industrial engineering and experience with the manufacture of automotive parts including injection molding of polyurethane parts.” Pet. 6–7 (citing Ex. 1001 ¶ 55); *see also id.* at ¶¶ 54, 56–58 (further expert testimony

concerning level of ordinary skill in the art). Patent Owner argues that the '592 patent "relies heavily on an understanding of polymer chemistry" and "discloses a polymer molded foam part," and, thus, "a background and training in polymer chemistry is required to understand this technology." PO Resp. 12. Patent Owner contends that "a proper PHOSITA is one that has an advanced degree (masters or higher) in chemistry or chemical engineering, with a background in polymer chemistry, and who has experience with the manufacture of foam parts, especially those that use polyurethane foams." *Id.* at 12–13. Petitioner contends that Patent Owner failed to provide any evidence that any of the inventors had an advanced degree, and Patent Owner's expert Dr. Hermann testified that it would not surprise him if they "only had bachelor degrees so long as they had significant experience working in the field." Reply 11 (citing Ex. 1012, 61:13–20).

Based on our review of the record, we adopt Petitioner's definition of the level of ordinary skill in the art. Unlike Petitioner, Patent Owner does not support its proposed definition with any citation to expert testimony, and the '592 patent's mere reference to a polymer molded part does not adequately support the notion that one of ordinary skill in the art must have an advanced degree in chemistry or chemical engineering in order to understand the claimed technology. Accordingly, we apply the following level of ordinary skill in the art at the time of the invention in this proceeding: an engineer with a bachelor's of science degree in materials, mechanical, or industrial engineering, and experience with the manufacture of automotive parts including injection molding of polyurethane parts.

C. Claim Construction

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear.⁴ 37 C.F.R. § 42.100(b). Consistent with the broadest reasonable construction, claim terms are presumed to have their ordinary and customary meaning as understood by a person of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Only terms which are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

In our Institution Decision, we construed “medium density polyurethane” to at least include polyurethane foam having a density in the range of 5–13 PCF (80–208 kg/m³). Inst. Dec. 6. Neither party disputes that construction, and we continue to use that construction, where applicable, in this Decision. The parties dispute the construction of “textured” and “embedded,” which we address in turn below.

1. Textured

Independent claims 1 and 9 require a cover having a “textured outer surface.” Petitioner contends that “textured” means “visual or tactile surface characteristics.” Pet. 10 (emphasis omitted). Relying on its expert, Dr. Wagoner, Petitioner asserts that the specification does not “limit the appearance of the engine cover outer surface to a particular type of texture,

⁴ The outcome of this case would be the same using the claim construction approach articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

i.e., rough, smooth, or patterned,” and instead uses the term broadly to refer to “any surface appearance.” Pet. 8 (citing Ex. 1001 ¶¶ 161–165).

According to Petitioner, Figure 1 of the ’592 patent discloses a smooth surface, and that the contour lines “simply depict a shape of the engine cover and not a particular surface characteristic.” *Id.* at 9; Reply 4. Petitioner also asserts that the prosecution history distinguishes the claimed textured appearance from the prior art, without specifying a particular type of texture. Pet. at 8–9.

In our Institution Decision, we adopted Petitioner’s proposed claim construction, which was unrebutted at that time. Inst. Dec. 7. We noted, however, that “Petitioner does not acknowledge portions of the specification suggesting a narrower scope of ‘textured’ that may require a specific surface characteristic other than a smooth texture, such as ‘grained.’” *Id.* (citing Ex. 1002, 3:11–13, 3:40–43).

Patent Owner proposes the following construction for “texture”: “having a tactile property that is not smooth.” PO Resp. 5. According to Patent Owner, that construction comports with the specification, which describes an outer surface made from molding in a “grained aluminum tool.” *Id.* (citing Ex. 1002, 3:11–13, 3:40–43; Ex. 2002 ¶ 29). Patent Owner contends that a “‘grained aluminum tool’ is a polymer molding tool that includes raised, tactile designs on one or more of the molding surfaces.” *Id.* (citing Ex. 2002 ¶¶ 30–31). Patent Owner asserts that the raised, tactile surface formed by the grained tool supports its construction, which excludes smooth surfaces. *Id.* at 5–6. Patent Owner also contends that the prosecution history supports its construction because the Examiner equated textured surfaces with those produced in the prior art using methods that

would produce surfaces with raised, tactile properties. *Id.* at 6. Patent Owner also points out alleged problems with Petitioner’s proposed construction. *Id.* at 6–9.

In its Reply, Petitioner argues that the specification’s description of a part made from a “grained” aluminum tool amounts to a mere preference that does not limit the scope of “textured.” Reply 3–4. Petitioner also repeats its allegation that Figure 1 of the ’592 patent depicts a smooth surface, and further argues that the prosecution history also shows examples of smooth surfaces when addressing the “textured” limitation. *Id.* at 4–5.

Based on our review of the parties’ arguments and the record, we construe “textured” to mean *having a tactile property that is not smooth*, as proposed by Patent Owner. The claim suggests that “textured” in the phrase “textured outer surface” means something, and limits the claim in some manner. Petitioner’s construction, however, would seemingly apply to every surface of every kind because it applies to tactile surfaces as well as smooth surfaces. In addition, Petitioner’s construction applies to mere visual characteristics as well, without any meaningful limitation. The claim language, and basic claim construction canons, counsel against such an approach. *See Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (“Claims are interpreted with an eye toward giving effect to all terms in the claim.”).

The specification also supports Patent Owner’s construction. Although the specification uses some permissive language such as “can” and “[p]referably,” the specification as a whole does not treat the textured surface created by a “grained aluminum tool” as encompassing smooth surfaces, as Petitioner proposes. Ex. 1002, 3:11–13, 3:40–41. Instead, the

specification as whole suggests that a textured surface has some tactile property, and using a grained aluminum tool is the preferred way to create such a tactile surface:

As shown in FIG. 1, an engine cover 10 includes a textured outer surface 12 with an embedded coating 14 and an inner surface 16 that faces the engine. . . .

The outer surface 12 can receive its texture from grained aluminum tool that forms part of the cavity during the molding process.

. . .

The method of making the engine cover 10 with an appealing outer surface includes several steps. Preferably, the cavity within which the molded cover is formed is preferably a grained aluminum tool with a[t] least one grained side to produce a textured surface of the engine cover 10.

Ex. 1002, 3:7–43. Importantly, no other process for making the textured outer surface appears in the specification, and the specification never suggests that a smooth texture may be produced.

Petitioner argues that Figure 1 depicts a cover with a smooth coating because the lines shown in the Figure do not depict a raised, tactile surface. *See* Pet. 9. However, as shown in the quote above, the specification describes the surface shown in Figure 1 as a “textured outer surface 12” formed using a grained aluminum tool. *See* Ex. 1002, 3:7–13. Petitioner never argues that a surface formed with a grained aluminum tool lacks a raised, tactile surface quality. Accordingly, whether claim 1 adequately depicts the raised, tactile quality or the surface or not, the figure, as described by the specification, does not depict a smooth surface created using some undisclosed process. Reading the relevant portions of the specification as a whole, we view the permissive “preferably” language in

the specification as merely indicating that the grained tool method of creating the textured surface is not the only way to produce a textured surface. The permissive language does not suggest, however, that “textured outer surface” in the claims can be smooth, and covers any surface of any kind, which would be the effect of adopting Petitioner’s proposed construction.

The prosecution history does not define the term “textured,” but the Examiner’s statement that textured surfaces can be produced from prior art methods that introduce raised tactile properties generally supports Patent Owner’s construction. PO Resp. 6. Petitioner correctly points out that this example, standing alone, does not necessarily limit the term, but it undermines Petitioner’s position that the prosecution history clearly supports a broader meaning that encompasses smooth surfaces. Reply 6 n.4.

Based on the foregoing, we construe “textured” to mean *having a tactile property that is not smooth*.

2. *Embedded*

Independent claims 1 and 9 require a surface with an “embedded protective coating.” Although Petitioner proposed a construction for the term “embedded” in the Petition, we did not view construction of that term as necessary at the time of our Institution Decision. *See* Inst. Dec. 7.

Petitioner contends that “embedded” means “incorporated and firmly affixed.” Pet. 10 (emphasis omitted). Petitioner relies on the specification’s description of embedded coating 14, which the Petitioner argues as consistent with the ordinary meaning of “embedded,” which is “to incorporate or contain as an essential part or characteristic.” Pet. 10 (citing Ex. 1001 ¶ 168; Ex. 1002, 2:27–29, 2:33–35; 3:49–53; Ex. 1010).

Patent Owner argues that “embedded” means “chemically bonded so as to form a single material” in the context of the ’592 patent. PO Resp. 9. Patent Owner relies on the specification’s description of the embedded coating created by applying a urethane-based paint in a thin layer. *Id.* at 9–10 (citing Ex. 1002, 3:49–52). According to Patent Owner, because the dictionary definition for “embed” is “to make something an integral part of,” “‘embedded’ in the claims refers to **how** the protective coating is integrated into the cover.” *Id.* at 10 (quoting Ex. 1010, def. 3). Patent Owner contends that the distinction the specification describes, when discussing the prior art, is that the claimed embedded coating forms a single layer product, or “an integral part.” *Id.* (citing 1002, 2:13–15). From these teachings, Patent Owner contends that the single piece, integral part must be formed by a *chemical bond* because the specification discloses a molding process involving a urethane-based paint coating with medium density polyurethane. *Id.* at 10–11.

In its Reply, Petitioner agrees with Patent Owner that the specification indicates that applying the embedded protective coating results in a “‘single piece construction,’ i.e., an ‘integral part.’” Reply 8 (quoting Ex. 1002, 2:10–15). Petitioner disagrees with Patent Owner’s assertion that any of the intrinsic evidence supports a construction requiring a chemical bond or a single layer of material. *Id.* at 8–10.

We agree with Petitioner that nothing in the specification or prosecution history supports the aspect of Patent Owner’s construction that requires a chemical bond. Instead, as the both parties acknowledge, the specification emphasizes that the embedded coating creates a coating that is an integral component of the engine cover, resulting in a cover that forms a

“single piece.” *See* Ex. 1002, 2:10–15, 3:9–10, 4:2–3; *see also* Ex. 1010 (Patent Owner’s proffered dictionary definition for “embed”: “to incorporate or contain as an essential part or characteristic”). We discern no support for Patent Owner’s proposed construction that further requires a chemical bond with the underlying foam of the cover. Moreover, at oral argument, counsel for Patent Owner agreed with Petitioner’s proposed construction, as Petitioner portrayed its meaning in the Reply. *See* Tr. Tran. 24:22–25:4.

Based on the foregoing, we construe “embedded” to mean *incorporated and firmly affixed*.

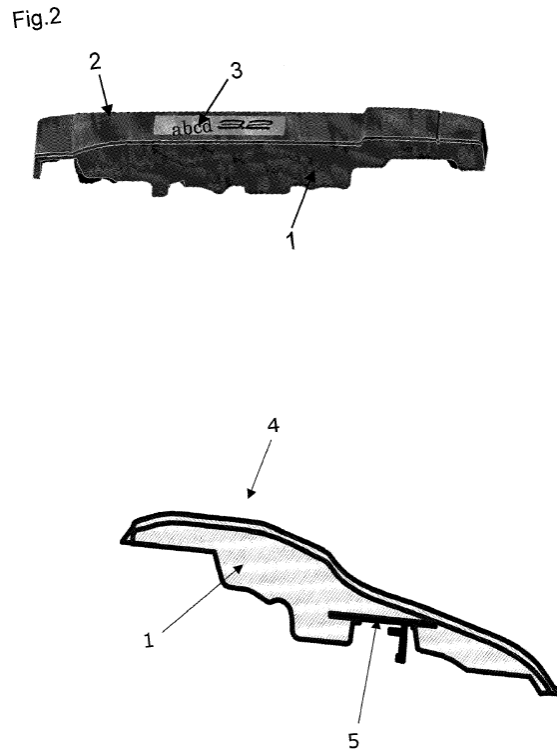
D. Anticipation Based on Polytec

Relying on the Declaration of Dr. Robert H. Wagoner (Ex. 1001, “Wagoner Declaration”), Petitioner alleges that Polytec anticipates claims 1–12 under 35 U.S.C. § 102(b). Pet. 12–48. Patent Owner, relying on the Declaration of Dr. Marc Herrmann (Ex. 2002, “Herrmann Declaration”), argues that Polytec does not anticipate because it does not disclose the “embedded” or “textured” limitations. PO Resp. 13–21.

1. Overview of Polytec

Polytec discloses an engine cover that includes a foam body that absorbs sound, and a surface element. Ex. 1007, 3:11–17. The foam body consists of polyurethane having a constant density. *Id.* at 1:25–26, 4:17, 4:25–26. The surface element, also referred to as a “design surface,” “can be optically enhanced, for instance by a back-foamed thermoformed film, possibly having an integrated emblem, or by surface-treating the foam body, for instance using InMoldCoating (IMC) or PU [i.e., polyurethane] spray skin or a PU cast skin.” *Id.* at 3:5–9.

Figure 2 of Polytec shows a section of an engine cover, and is reproduced below:



As shown above, Figure 2 discloses a section view through Polytec's engine cover. *Id.* at 4:25. The engine cover includes foam body 1, surface element 2, emblem 3, design surface 4, and attachment 5. *Id.* at 4:26–5:1. Design surface 4, shown in Figure 2, includes “either a spray skin or a cast skin.” *Id.* at 4:27–28. Figure 3 discloses design surface 6 “dyed using IMC.” *See id.* at 5:4–5, Fig. 3. Other figures disclose various methods of mounting the engine cover to the engine, including the use of mounting elements 9, 11 or support structure 13 that supports the stability of foam body 1. *See id.* at 5:16–6:20, Figs. 5–8. According to Polytec, the invention addresses acoustic and design requirements “by forming the entire design surface as a foam body also forming the sound absorber, and not as usual, as a plastic part.” *Id.* at 3:4–5.

2. Discussion

Petitioner employs its own construction of the “textured” limitation in its anticipation ground. *See* Pet. 15. As noted above, however, we reject Petitioner’s broad construction of “textured,” and instead adopt Patent Owner’s construction—“having a tactile property that is not smooth.” Petitioner sets forth an alternative obviousness argument in the event that we did not adopt its construction of textured, but did not set forth an alternative anticipation argument in the event that we did not adopt its construction. *See id.* at 15, 17.

In its Reply, Petitioner contends that even if we adopt Patent Owner’s construction for “textured,” that Polytec “inherently teaches a texture” because every surface, “even a visually smooth surface has ‘minimal roughness.’” Reply 15 (quoting deposition of Patent Owner’s expert at Ex. 1012, 33:7–24, 34:6-10). Because Petitioner never raised this inherency argument in the Petition, we deem the argument waived. Petitioner was well aware that we may not adopt its broad construction for “textured,” and set forth an obviousness argument in light of that possibility (*see infra* p. 37), but chose not to set forth an inherency argument. *See* Pet. 15, 18. Moreover, Petitioner’s inherency argument, like its claim construction argument, would effectively read “textured” out of the claim by covering virtually all surfaces, even smooth surfaces, because all surfaces contain some inherent roughness. Accordingly, we view the inherency argument as not only waived, but also unconvincing.

Based on the foregoing, Petitioner has not established that Polytec discloses the “textured” limitation in independent claims 1 and 9, and has

therefore not established that Polytec anticipates those claims, or claims 2–8 and 10–12 that ultimately depend from claims 1 and 9.

E. Obviousness Based on Polytec and Burr

Petitioner, relying in part on the Wagoner Declaration, alleges that Polytec and Burr render claims 1–19 obvious under 35 U.S.C. § 103(a). Pet. 12–69. Patent Owner, relying on the Declaration of Dr. Herrmann, argues that neither Polytec nor Burr discloses the “embedded” limitation, and therefore none of the claims would have been obvious over Polytec and Burr. PO Resp. 13–21.⁵

1. Overview of Burr

Burr, titled “Method for Manufacturing a Textured Surfaced Composite Foamed Article and the Mold Therefor,” discloses a method for making foamed articles having a skin formed with an embossed design. Ex. 1008, 1:3–5, 1:16–18. The embossed film on the foam produces an article with an integral connection between the foam and film. *Id.* at 1:36–38. To make the article, Burr discloses cavity 5 having “design 6 etched or embossed on the surface of the cavity.” *Id.* at 1:72–2:2. For metal cavities, Burr discloses the use of a mold-releasing agent over the mold

⁵ In the Institution Decision, we interpreted Petitioner’s ground as based on Polytec and Burr for claims 1–19 based on the text of the Petition, even though the headings in Petitioner’s argument for claims 1–12 suggested an argument based on Polytec alone. Inst. Dec. 5 n.1, 15 n.5; Pet. 11, 15. Patent Owner does not challenge that characterization of Petitioner’s challenge to claims 1–12 or argue that Petitioner should be limited to an obviousness challenge based on Polytec alone. See PO Resp. 13–21; see also *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2138–39 (upholding Board decision to include prior art references in ground at institution, based on Board discretion).

surface prior to adding liquid polyurethane to the mold. *Id.* at 2:2–5. Burr identifies polyethylenes, waxes, and silicones as preferred releasing agents. *Id.* at 2:5–7. Burr describes various processes for producing skin or film 21, including laying down three spray coats that include a layer of polyurethane and a second layer of paint. *Id.* at 6:47–54.

By employing the methods Burr discloses, “it is possible to get non-specular films having a paint finish or appearance referred to as satin, eggshell, flat, velvet or suede.” *Id.* at 6:65–67. Burr identifies automobile crash pads, seat cushions, and arm rests as possible articles suitable for manufacture using the methods disclosed by Burr. *Id.* at 1:27–28, 5:56, 6:58.

2. Analysis of Independent Claim 1

i. The “Embedded” Limitation

Patent Owner’s only argument against the obviousness of claim 1 over Polytec and Burr rests on the alleged failure of Polytec to disclose the “embedded” limitation, and we begin our analysis there. *See* PO Resp. 13–19. As noted above, we adopt Petitioner’s construction of “embedded” to mean “incorporated and firmly affixed.”

Petitioner, relying on its proposed construction and the Wagoner Declaration, argues that Polytec discloses the “embedded protective coating.” Pet. 16. First, Petitioner notes that he ’592 patent describes “one example of an embedded protective coating as an in-mold coating (IMC), such as a urethane-based paint. *Id.* (citing Ex. 1002, 3:13–14, 3:49–53). Petitioner also notes the ’592 patent teaches the “coating may also be a urethane spray skin.” *Id.* (citing Ex. 1002, 3:53–56). Petitioner then argues that Polytec discloses the same options for creating an embedded design

surface on a foam body, including “a back-foamed thermoformed film, an IMC, a PU spray skin, or a PU cast skin.” *Id.* (citing Ex. 1001 ¶¶ 197–200; Ex. 1007, 3:5–9). According to Petitioner, Polytec, like the ’592 patent, describes an IMC that can be a urethane-based paint. *Id.* (citing Ex. 1007, 3:5–9, 5:4–5, 7:23). Petitioner also asserts that Polytec describes its design surfaces as “integral to the cover” because it describes an “integrated emblem” and “integral skin.” *Id.* (citing Ex. 1007, 3:28–31) (emphasis omitted).

Patent Owner argues that Polytec’s disclosed methods of forming the design surface result in a “multi-layer cover,” and that such a cover results in a “multi-piece” construction. PO Resp. 14 (citing Ex. 1007, 1:14–16, 3:11–12, claim 1). Patent Owner, relying on the Herrmann Declaration, then summarizes how Polytec’s disclosed methods allegedly work, and contends that none of them result in a chemical bond between the layers. *Id.* at 15–16 (citing Ex. 2002 ¶¶ 63–65). Responding to Petitioner’s assertions, Patent Owner argues that the ’592 patent and Polytec do not disclose the same options for creating an embedded design surface, because the ’592 patent’s method results in a “single piece of material,” and Polytec’s methods result in a “multi-layer” product that does not have an embedded coating. *Id.* at 17. Patent Owner also argues that Petitioner fails to provide evidence to support its position, even if we adopt Petitioner’s construction. *Id.* at 17–19. More specifically, Patent Owner contends that Petitioner does not adequately support its position that Polytec’s methods result in an “incorporated and firmly affixed” coating. *Id.* at 18. Patent Owner also argues that Petitioner’s positions lack citation to convincing evidence in Polytec. *Id.* at 19.

In its Reply, Petitioner contends that, under its construction, the claim “simply requires that the coating is incorporated into or is an integral part of the engine cover, as distinguished from the two-piece engine covers described in the ‘Background’ of the ’592 Patent.” Reply 17. Petitioner again focuses on the similarity of the methods used in the ’592 patent and Polytec, and argues that Polytec stresses, like the ’592 patent, how its design distinguishes over a cover with a separate plastic part. *Id.* at 17–18 (citing Ex. 1007, 3:4–9, 3:28–31). Petitioner also argues that even using Patent Owner’s construction, Polytec discloses the limitation or, in the alternative, Burr does so. *Id.* at 18–20.

Based on our review of the record, and applying Petitioner’s proposed construction that we adopted above, we find that Petitioner establishes adequately that Polytec discloses an embedded coating. First, as Petitioner notes, both the ’592 patent and Polytec use similar terminology when describing how the respective coatings are made. Pet. 16; Reply 17–18. In particular, both the ’592 patent and Polytec disclose use of an in-mold coating (“IMC”) or a urethane-based spray skin to create the respective coatings. Ex. 1002, 3:13–16 (“The coating 14 can be an in-mold coating, such as urethane-based paint.”), 3:53–54 (“Another option for top coating is a urethane spray skin.”); Ex. 1007, 3:5–8 (“The design surface can be optically enhanced . . . by surface-treating the foam body, for instance using InMoldCoating (IMC) or PU [i.e., polyurethane] spray skin.”), 7:23 (“an IMC coat of paint”); Ex. 1001 ¶ 198. In addition, both the ’592 and Polytec disclose coating polyurethane foam. Ex. 1002, 3:21–22; Ex. 1007, 1:26–27. These similarities strongly suggest that Polytec discloses a coating made with the same process as the claimed “embedded protective coating,” and

that Polytec discloses a coating embedded with the underlying foam. In addition, both the '592 patent and Polytec refer to the resulting product as having the coating and underlying foam integral with one another, rather than a separate foam and plastic part. *See* Ex. 1002, 2:14–15, 3:9–10; Ex. 1007, 3:4–5 (“The invention puts this into practice by forming the entire design surface as a foam body also forming the sound absorber, and not as usual, as a plastic part.”), 3:30–31 (“integral skin”). Polytec’s teachings more than adequately support Petitioner’s argument that Polytec discloses an “embedded” coating “incorporated and firmly affixed” to the underlying foam.

Patent Owner’s arguments based on Polytec’s alleged failure to disclose a design coating chemically bonded to an underlying material are based on Patent Owner’s proposed claim construction, which we rejected above. Patent Owner’s arguments based on its proposed construction, as well as Petitioner’s alternative arguments based on that construction, are, therefore, not relevant. Similarly, Patent Owner’s argument that Polytec discloses a multi-layer product does not track either its proposed construction or Petitioner’s because neither requires a single layer, and Patent Owner does not adequately explain why a product with multiple layers cannot have one layer “embedded” within another under Petitioner’s construction. Patent Owner further argues that Petitioner’s assertions lack evidentiary support, but as discussed above, we view Petitioner’s cited evidence as adequate to establish that Polytec discloses the claimed “embedded” coating.

ii. Remaining Limitations

With respect to the remaining limitations of claim 1, Petitioner contends that (1) Polytec discloses all of the limitations with the exception of the textured limitation, (2) Burr discloses the textured limitation, and (3) it would have been obvious to combine Polytec and Burr to arrive at the claimed invention. Pet. 12–20, 49. Patent Owner does not contest any of these arguments, including Petitioner’s argument that Burr discloses the textured limitation and the combination of Polytec and Burr would have been obvious. See PO Resp. 13–21; Tr. Tran. 27:14–23. After our own review of Petitioner’s argument and evidence, we find that Polytec discloses the remaining limitations of claim 1 with the exception of the textured limitation, that Burr discloses the textured limitation, and that it would have been obvious to combine the two references.

Claim 1 recites “a core of the exterior engine cover being medium density polyurethane.” As noted above, we construed “medium density polyurethane” to at least include polyurethane foam having a density in the range of 5–13 PCF (80–208 kg/m³) in the Institution Decision, and we continue to use that construction in this Decision. Inst. Dec. 6. Petitioner contends that Polytec discloses a cover with a medium density foam core because Polytec discloses a polyurethane core having a density falling within the range 5.6–11.2 PCF. Pet. 13 (citing Ex. 1001 ¶ 158; Ex. 1007, 4:25–27). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses “a core of the exterior engine cover being medium density polyurethane.”

Claim 1 recites “a textured outer surface of the exterior engine cover.” We construed “textured” above to mean “having a tactile property that is not

smooth,” and concluded that Polytec does not disclose this limitation. Petitioner argues that even using that construction, Burr discloses the claimed textured surface. *See* Pet. 18 (citing Ex. 1001 ¶¶ 342, 429; Ex. 1008, 6:65–67). We agree. Burr discloses using a “METHOD FOR MANUFACTURING A **TEXTURED** SURFACED COMPOSITE FOAMED ARTICLE.” Ex. 1008, 1:3–4 (emphasis added). Burr discloses creation of a skin on a foamed article, where the skin includes an embossed design. *Id.* at 1:16–18. Burr also describes producing “a paint finish or appearance referred to as satin, eggshell, flat, velvet or suede.” *Id.* at 6:65–67. We are persuaded by Petitioner’s argument and evidence regarding Burr, and find that Burr discloses a “textured outer surface” and that, if combined with Polytec, the result would meet the limitation requiring “a textured outer surface of the exterior engine cover.”

Petitioner, relying on the Wagoner Declaration, also provides reasons for combining Burr with Polytec. Pet. 49 (citing Ex. 1001 ¶¶ 330–333). According to Petitioner, both Polytec and Burr relate to standard reaction injection molding (“RIM”) processing in the automotive industry, and one of ordinary skill in the art would have been motivated to combine the references due to the similarity in their fields of endeavor. *Id.* Petitioner argues that “[g]iven the nature of standard RIM processing,” one of ordinary skill in the art “would have been motivated to use the conventional processing steps of Burr with the RIM processing of Polytec to form its textured engine cover.” *Id.* Petitioner also contends that applying Burr’s techniques to Polytec would “improve cost, weight, and provide a more appealing appearance.” *Id.* (citing Ex. 1001 ¶ 333). Finally, Petitioner notes, in the context of claim 13, that modifying Polytec to include grained

or embossed tools taught by Burr would be obvious, given the optical enhancements already contemplated by Polytec. *Id.* at 56 (citing Ex. 1001 ¶ 362). Based on Petitioner’s argument and evidence (summarized above), which we are persuaded by, we find that Petitioner has provided a sufficient rationale for the combination of Polytec and Burr.

Claim 1 recites “with an embedded protective coating that is denser than the core.” We found that Polytec discloses the “embedded” limitation above. With respect to the “protective coating that is denser than the core” aspect of this limitation, Petitioner argues that any of Polytec’s “coatings would serve to provide protection for the foam core of Polytec.” Pet. 16 (citing Ex. 1001 ¶ 199). Petitioner also contends that Polytec’s “urethane-based paints and PU spray skins are inherently denser than polyurethane foam.” *Id.* at 17 (citing Ex. 1001 ¶¶ 198–199, 204–206). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses “an embedded protective coating that is denser than the core.”

Claim 1 recites “wherein the outer surface exposed to the environment has a visible outer surface when installed.” Petitioner argues that one of ordinary skill in the art “readily understands that an automotive engine cover is ‘visible’ and ‘exposed to the environment.’” Pet. 18–19 (citing Ex. 1001 ¶ 209). Petitioner also contends that Polytec discloses (1) a cover with an integrated emblem on its outer surface; (2) “optically enhanced” surfaces intended to be visible when installed; and (3) an upper surface of the foam body identified as a “visible surface.” *Id.* at 19–20 (citing Ex. 1001 ¶¶ 209–210; Ex. 1007, 5:10–13, Figs. 1, 4). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses “wherein the outer

surface exposed to the environment has a visible outer surface when installed.”

iii. Objective Evidence of Non-Obviousness

As part of a section addressing the alleged improvement of the ’592 patent over the prior art, Patent Owner makes a limited argument that “[t]he combination of a thin protective coating that is both textured and embedded into the engine cover has made Eagle’s molded foam engine cover an industry success.” PO Resp. 3. In support of its argument, Patent Owner contends that “[i]n the nearly 10 years since Eagle first introduced foam engine covers to the industry, the market share for foam engine covers has increased nearly 10%.” *Id.* at 3–4 (citing Ex. 2001 ¶ 14). Patent Owner also contends that “[s]ome customers have switched nearly all their business to Eagle” and “[t]hese and other factors show the product covered by Eagle’s patent has been a commercial success.” *Id.* at 4 (citing Ex. 2001 ¶¶ 13, 15). Petitioner argues that Patent Owner has not met its burden to establish secondary considerations by failing to establish the required nexus, and by failing to provide any evidence to back up its assertions. Reply 23–24.

We agree with Petitioner that Patent Owner’s brief, largely unsupported, assertions do not establish commercial success. First, establishing a nexus between the commercially successful product and the patented invention is a necessary predicate in demonstrating commercial success. Patent Owner makes no effort to establish a nexus between the alleged success and the merits of the claimed invention, and has provided insufficient evidence regarding Patent Owner’s commercial product to show that it contains all of the limitations of claim 1, or any other claim of the ’592 patent. *See* PO Resp. 3–4; Ex. 2001 ¶¶ 13–15. In addition, conclusory

statements in the accompanying Declaration, without any supporting evidence, do not support adequately the allegations regarding increased market share and customer switching. See Ex. 2001 ¶¶13–15. Under these circumstances, we find that Patent Owner has not established commercial success.

iv. Conclusion as to Claim 1

Based on the foregoing, and after consideration of all of the *Graham* factors and the full record before us, we are persuaded that Petitioner has established, by a preponderance of evidence, that claim 1 would have been obvious over Polytec and Burr.

3. Claims 2–12

Claims 2–8 ultimately depend from claim 1, independent claim 9 contains many of the same claim limitations as claim 1, and claims 10–12 ultimately depend from claim 9. Ex. 1002, 4:29–5:7. We begin by addressing independent claim 9.

With respect to claim 9, due to the similarity in the claims, Petitioner and Patent Owner raise essentially the same arguments as discussed above with respect to claim 1.⁶ For example, claim 9 recites “a core of the engine cover with a density of 5–13 PCF that provides a high level of sound absorption in close association with the engine being covered.” For the same reasons discussed above, with respect to claim 1’s recitation of “a core of the exterior engine cover being medium density,” and Petitioner’s

⁶ As noted below, Patent Owner attempts to raise arguments regarding the qualifications of Petitioner’s expert and the dependent claims for the first time in its Supplemental Response, but those arguments could have and should have been raised in Patent Owner’s Response, and are waived.

evidence supporting the assertion that Polytec discloses a cover with a high level of sound absorption, we find that Polytec discloses this limitation. *See* Pet. 37 (citing Ex. 1001 ¶¶ 158, 276–278; Ex. 1002, 3:20–22; Ex. 1007, Abstract, 1:8–9, 3:4–5, 4:27). We also find, as discussed above, that Polytec in combination with Burr discloses “a textured outer surface with an embedded protective coating.”⁷

With respect to the limitation requiring a coating “that provides consistent color and UV protection,” Petitioner notes the similarities between the coatings described in the ’592 patent and Polytec’s coating, and argues that Polytec inherently discloses “a coating with consistent color and UV protection.” Pet. 37–39 (citing Ex. 1001 ¶¶ 235, 291, 386; Ex. 1002, 3:51–53; Ex. 1007, 5:3–5, 7:23). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses a coating “that provides consistent color and UV protection.”⁸

With respect to the limitation requiring a cover that “is an integral piece,” Petitioner argues that Polytec discloses “an integral (one-piece)

⁷ Patent Owner raises one argument with respect to claim 9, in addition to those made above with respect to claim 1. Patent Owner argues that, with respect to claim 9, “Petitioner fails to address the ‘embedded protective coating’ for that element” other than to make conclusory assertions. PO Resp. 19. We disagree. Petitioner not only made the assertions noted by Patent Owner, Petitioner also referred back to its argument with respect to the same limitation in claim 1, which we were persuaded by for the reasons provided above. *See* Pet. 37, 39.

⁸ Here and elsewhere, Petitioner makes obviousness arguments in the alternative, in the event that Polytec does not disclose the limitation in question. *See, e.g.*, Pet. 39, 23, 25. As we conclude that Petitioner establishes that Polytec discloses the limitation, either expressly or inherently, we see no reason to reach these issues, unless noted otherwise.

engine cover,” and relies on Polytec’s emphasis on its product made of a “single piece” and having an “integral skin (i.e., a foam body made of integral foam).” Pet. 40 (citing Ex. 1001 ¶ 295; Ex. 1002, 2:3–4, 2:13–17; Ex. 1007, 1:16, 3:27–4:1, 5:4, Fig. 3; Ex. 1011, 2) (emphasis omitted). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses a cover that is an integral piece.

Finally, with respect to a cover “adapted to externally cover a portion of the engine as an exterior component with the outer surface visible inside a vehicle engine compartment,” Petitioner argues that Polytec “teaches that the engine cover is adapted to externally cover a portion of the engine as an exterior component with the outer surface ‘visible’ inside a vehicle engine compartment.” Pet. 41 (citing Ex. 1001 ¶¶ 189, 209, 300–301; Ex. 1002, 5:13; Ex. 1007, 1:8–9, Fig. 1). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses a cover “adapted to externally cover a portion of the engine as an exterior component with the outer surface visible inside a vehicle engine compartment.”

Claim 2 depends from claim 1 and further recites

wherein the engine cover is a single piece with in-molded apertures and protrusions extending from an inner surface of the engine cover wherein areas between the apertures and protrusions are set back so as to not contact the engine being covered.

Petitioner argues that Polytec discloses an engine cover with in-molded apertures in Figures 6 and 8, and protrusions extending from an inner surface in Figure 2, with the areas between the protrusions forming recesses set back to avoid contact with the engine. Pet. 20–23 (citing Ex. 1001 ¶¶ 214, 216–219, 221, 260; Ex. 1007, 4:14–15, 4:22–23, 5:30–6:20, 8:17–24, Figs. 2, 6–

8). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses the limitations in claim 2.

Claim 3 depends from claim 1 and further recites “wherein the protective coating is in-molded urethane-based paint that provides consistent color, gloss and UV protection on the outer surface.” Petitioner argues that Polytec discloses urethane-based paint and in-mold coatings that inherently include the claimed properties of “consistent color, gloss and UV protection on the outer surface.” Pet. 24–25 (citing Ex. 1001 ¶¶ 171–172, 206, 224, 231–233; Ex. 1007, 5:4–5). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses the limitations in claim 3.

Claim 4 depends from claim 1 and further recites “wherein the core is high temperature polyurethane with a density of 5–13 PCF and provides a high level of sound absorption in close association with the engine being covered.” Petitioner argues that Polytec inherently discloses “high temperature” polyurethane due to its proximity to the engine. Pet. 26 (citing Ex. 1001 ¶¶ 107, 132, 179–180, 240; Ex. 1007, Abstract, 1:8–9). Petitioner also argues that Polytec discloses the claimed polyurethane density, and the noise abatement benefits that correspond to the claimed “high level of sound absorption.” See *id.* at 27 (citing Ex. 1001 ¶¶ 192–193, 238–239, 241–242; Ex. 1007, Abstract, 1:8–9, 3:11–17). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses the limitations in claim 4.

Claim 5 depends from claim 1 and further recites “wherein an inner surface of the engine cover does not have a coating, wherein the inner surface faces the engine when the engine cover is installed.” Claim 6 depends from claim 5 and further recites “wherein the inner surface is raw

polyurethane foam.” Claim 10 depends from claim 9 and contains limitations that are virtually the same as a combination of claims 5 and 6: “wherein an inner surface of the engine cover that is adjacent to the engine when installed does not have a coating and is raw polyurethane foam.” Petitioner relies on Polytec’s disclosure of a coating on only one side of the engine cover, as shown in Figure 2. Pet. 28–29 (addressing claim 5) (citing Ex. 1001 ¶¶ 244–245, 248; Ex. 1007, 3:13–15, 7:3–9, Fig. 2), 30–31 (addressing claim 6) (citing Ex. 1001 ¶¶ 251–253, 255–256; Ex. 1002, 3:17–19; Ex. 1007, 1:26–27, 3:13–15, Fig. 2), 42–43 (addressing claim 10) (citing Ex. 1001 ¶¶ 210, 256, 306, 309, 313; Ex. 1003, 90; Ex. 1007, 1:26–27, 3:11–19, 7:3–9, Fig. 2). According to Petitioner, the lack of any coating described on the side opposite the coated, design surface side, indicates that the side remains “uncoated or raw.” *Id.* at 29, 31, 42. We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses the limitations in claims 5, 6, and 10.

Claim 7 depends from claim 5 and further recites “having protrusions extending from the inner surface adapted to engage the engine being covered so the outer surface of the engine cover does not sag when installed on the engine.” Claim 12 depends from claim 10 and contains the same limitations as claim 7. Petitioner relies on its arguments made with respect to claim 2, and argues that Polytec disclose the claimed protrusions that support the foam core and prevent sagging. Pet. 32 (addressing claim 7) (citing Ex. 1001 ¶ 260; Ex. 1002, 3:31–33), 47–48 (addressing claim 12) (citing Ex. 1001 ¶¶ 327, 329, 352; Ex. 1007, Figs. 2, 8). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses the limitations in claims 7 and 12.

Claim 8 depends from claim 1 and further recites “a series of molded apertures to help secure the engine cover to the engine.” Claim 11 depends from claim 9 and similarly recites “a series of molded apertures through the engine cover adapted to secure the engine cover to the engine.” Petitioner relies on its arguments made with respect to claim 2, and argues that Polytec disclose the claimed apertures that help secure the cover to the engine. Pet. 33–35 (addressing claim 8) (citing Ex. 1001 ¶¶ 267–269) (Ex. 1007, 5:30–6:6, 6:15–20, 8:17–24, Figs. 6, 8); 44–46 (addressing claim 11) (citing Ex. 1001 ¶¶ 317–320, 322) (Ex. 1007, 5:30–6:6, 6:15–20, 8:17–24, Figs. 6, 8). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses the limitations in claims 8 and 11.

Based on the foregoing, and after considering all of the *Graham* factors, we are persuaded that Petitioner established, by a preponderance of evidence, that claims 2–12 would have been obvious over Polytec and Burr.

4. Claims 13–19

Independent claim 13 relates to a method of making an engine cover with a textured outer surface, and contains a number of limitations that correspond to similar limitations in claims 1 and 9. Ex. 1002, 5:8–9. Claims 14–19 ultimately depend from claim 13. Petitioner relies on much of the same evidence and argument with respect to claim 13 as discussed above with respect to claims 1 and 9. See Pet. 49–59. Patent Owner does not address any of Petitioner’s evidence and argument regarding claims 13–19, or argue that any of these claims are not obvious over Polytec and Burr. See PO Resp. 15–21.

Claim 13 recites “applying mold release to a tool having a grained side.” Petitioner contends that Polytec inherently discloses this step because

all reaction injection molding (“RIM”) procedures using polyurethane foam and metal dies must use mold release agents to be able to remove the final product. Pet. 52 (citing Ex. 1001 ¶¶ 91, 92, 346–347). Petitioner also contends that in the event that Polytec does not inherently disclose the step of “applying mold release to a tool having a grained side,” Burr expressly teaches this step. *Id.* at 52–54 (citing Ex. 1001 ¶ 348; Ex. 1008, 1:16–18, 1:27–28, 1:33–38, 1:72–2:6). More specifically, Petitioner relies on Burr’s disclosure of embossing the mold cavity to create the embossed surface (i.e., “a grained side”), and the use of a mold releasing agent. *Id.* at 52–53 (citing Ex. 1008, 1:72–2:6). We are persuaded by Petitioner’s argument and evidence, and find that Polytec inherently discloses “applying mold release to a tool having a grained side” and that even if it did not, Burr discloses this step. We also find that Petitioner has provided a sufficient rationale for combining Polytec and Burr with respect to claim 13. *See* Pet. 49 (citing Ex. 1001 ¶ 298, 330–333), 54 (citing Ex. 1001 ¶¶ 340, 342; Ex. 1007, 3:6, 3:28).

Claim 13 recites “applying coating to the grained side of the tool that is applied with mold release.” Petitioner argues that Polytec discloses applying in-mold coatings to the grained side of the tool, and to the extent that Polytec does not teach the limitation, Burr discloses spraying the mold surface in conjunction with its disclosed RIM process. Pet. 54–55 (citing Ex. 1001 ¶¶ 346–348; Ex. 1007, 3:5–9; Ex. 1008, 1:67–69, 1:72–2:8, 6:47–55, Fig. 7). Petitioner also contends that one of ordinary skill in the art “would be motivated to employ the coating to the same side of the tool that has mold release in forming the Polytec engine cover as this would yield predictable results” and to prevent sticking of the part to the mold. *Id.* at 55–56 (citing Ex. 1001 ¶¶ 353, 354). We are persuaded by Petitioner’s

argument and evidence, and find that Polytec discloses “applying coating to the grained side of the tool that is applied with mold release,” and that even if it did not, Burr discloses this step.

Claim 13 recites “dispensing foam of high temperature polyurethane with a density of 5–13 PCF into a cavity including the grained side of the tool, the cavity forming the shape of the engine cover.” Petitioner relies on its analysis from claims 4 and 9, and argues that Polytec inherently discloses injecting foam into a cavity forming the shape of an engine cover. Pet. 56 (citing Ex. 1001 ¶¶ 357–361; Ex. 1007, 1:25–27). Petitioner also argues that to the extent Polytec does not disclose the limitation, the step would have been obvious over Polytec and Burr, which discloses the “grained side of the tool” required by this step of the claim. *Id.* at 56–57 (citing Ex. 1001 ¶ 362; Ex. 1008, 6:47–55). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses this step, and that even if it did not, the combination of Polytec and Burr discloses this step.

Claim 13 recites “allowing foam to expand in the cavity and cure.” Petitioner argues that Polytec inherently disclose this step, but even if it did not, Burr expressly discloses allowing foam material to expand and set prior to removal from the mold. Pet. 57–58 (citing Ex. 1001 ¶¶ 364, 366–368; Ex. 1007, 1:25–27; Ex. 1008, 1:39–52). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses this step, and that even if it did not, the combination of Polytec and Burr discloses this step.

Claim 13 recites “extracting from the tool the engine cover having the textured outer surface with the in-mold applied coating that provides protection as an outer surface of at least a portion of the engine cover.” Petitioner relies on its previous arguments regarding similar limitations, and

argues that Polytec discloses use of an IMC to provide protection for its outer design surface on an engine cover. Pet. 58 (incorporating arguments from Pet. 24–25, 49–52 and citing Ex. 1007, 3:4–9, 5:3–5, Fig. 2).

Petitioner also argues that Polytec “necessarily teaches extracting the engine cover from the tool,” and to the extent it does not do so, Burr explains that such extraction is a well-known step of RIM processes. *Id.* at 58–59 (citing Ex. 1001 ¶¶ 365–366, 380–381; Ex. 1008, 1:50–52). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses this step, and that even if it did not, the combination of Polytec and Burr discloses this step.

In summary, based on Petitioner’s arguments and evidence, and considering all of the *Graham* factors, we determine that Petitioner has established, by a preponderance of the evidence, that claim 13 would have been obvious over Polytec and Burr. We now turn to dependent claims 14–19.

Claim 14 recites a “spray applied urethane-based paint that provides consistent color, gloss and UV protection.” Petitioner relies on its previous evidence and argument made in connection with similar limitations in claims 1, 3, 9, and argues that Polytec discloses an IMC that provides consistent color, gloss, and UV protection, and that Polytec inherently discloses spray application of coatings. Pet. 59 (citing Ex. 1001 ¶¶ 387, 391; Ex. 1007, 3:4–9, 4:27–28, 5:3–5). Petitioner also argues that to the extent Polytec does not disclose spray-applied urethane-based paint, such a modification would have been obvious in view of Burr’s teaching of that step. *Id.* at 60–61 (citing Ex. 1008, 1:32–36, 1:67–68, 2:17–19, Fig. 7). Petitioner also contends that “spray applying a urethane-based paint as taught in Burr to provide

consistent color, gloss, and UV protection on an engine cover outer surface as taught by Polytec would yield predictable results.” *Id.* at 60 (citing Ex. 1001 ¶ 391). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses this step, and that even if it did not, the combination of Polytec and Burr discloses this step.

Claim 15 recites a coating with a thickness of “0.0008 to 0.0025 inch thick.” Petitioner acknowledges that Polytec does not explicitly disclose the claimed thickness, but argues the claimed thickness range was “widely disclosed and used daily in many millions of parts.” Pet. 61 (quoting Ex. 1001 ¶ 395). Petitioner also contends that prior art cited by the Examiner also disclose thicknesses in this range, and Burr discloses a thickness “insignificantly different” than the claimed range. *Id.* (emphasis omitted) (citing Ex. 1001 ¶ 396; Ex. 1004, 4:57; Ex. 1008, 2:15–16). Based on this evidence, Petitioner contends that the coating thickness “is merely a design choice” and that “it would be obvious to apply a coating with a thickness of 0.0008 to 0.0025 inches” thick for “aesthetic purposes.” *Id.* at 61–62 (citing Ex. 1001 ¶¶ 395–398). Petitioner has set forth sufficient evidence, unrebutted by Patent Owner, that the claimed thickness range was known in the art, and that one of ordinary skill in the art would have chosen such a thickness for aesthetic purposes. Based on the foregoing, we are persuaded by Petitioner’s argument and evidence, and find that the claimed thickness was a design choice and would have been obvious.

Claim 16 recites “controlling temperature of the tool during expanding and curing of the foam.” Petitioner argues that Polytec inherently discloses controlling temperature because one of ordinary skill in the art “would know that RIM manufacturing of polyurethane foam parts taught by

Polytec always involves curing and expanding at a controlled temperature.” Pet. 62 (citing Ex. 1001 ¶¶ 401–402). Petitioner also argues that Burr discloses specific instructions to heat its polyurethane product within a specific temperature range for a specific period of time. *Id.* at 63 (citing Ex. 1008, 2:31–36). Petitioner contends that it would have been obvious to employ Burr’s teachings “as it would improve and be required to provide a satisfactory molding process.” *Id.* at 63 (citing Ex. 1001 ¶ 405). We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses this step, and that even if it did not, the combination of Polytec and Burr discloses this step.

Claim 17 recites apertures, protrusions, and set back areas similar to those required by claim 2. Ex. 1002, 6:10–14. Petitioner relies on the previous analysis for claim 2, and relies again on Polytec Figures 2, 6, and 8 in contending that Polytec discloses the limitations of claim 17. Pet. 63–66 (citing Ex. 1001 ¶¶ 409–414; Ex. 1007, 4:14–15, 4:22–23, 5:30–6:20, 8:17–24, Figs. 2, 6, 8). Petitioner also contends that even if Polytec does not disclose the limitations, it would have been obvious to include multiple apertures to provide secure attachment of the engine cover to the engine, and set back areas to prevent unnecessary heat generation. *Id.* at 66. We are persuaded by Petitioner’s argument and evidence, and find that Polytec discloses the limitations of claim 17.

Claim 18 requires no coating on a second side of the tool, and claim 19 depends from claim 18 and requires a second side “that is raw polyurethane foam.” Ex. 1002, 6:15–20. Claims 18 and 19 largely mirror claims 5 and 6, and Petitioner relies on the analysis of claims 5 and 6 in its argument and evidence regarding claims 18 and 19, respectively. Pet. 67.

Petitioner also relies, as it did for claims 5 and 6, on Polytec’s disclosure of a coating on only one side of the engine cover, leaving the other side raw polyurethane free of a coating. *Id.* For the same reasons discussed above in the context of claims 5 and 6, we find that Polytec discloses the limitations in claims 18 and 19.

Based on our independent review of Petitioner’s arguments and evidence, and considering all of the *Graham* factors, we determine that Petitioner has established, by a preponderance of the evidence, that claims 13–19 would have been obvious in view of Polytec and Burr,

F. Obviousness Based on Polytec Alone

As noted above, Petitioner also argues that Polytec alone renders claims 1–19 obvious. For completeness, we consider this additional potential basis for finding these claims unpatentable as obvious. At the outset, we note that although Petitioner mentioned an obviousness argument based on Polytec alone for method claims 13–19, Petitioner did not develop that argument further and instead framed its ground directed to claims 13–19 as based on a combination of Polytec and Burr. *See* Pet. 3, 49–59; Reply 1 (“Patent Owner does not challenge the Board’s finding that Claims 13–19 are obvious over Polytec and Burr.”). We find that Petitioner has not established that claims 13–19 would have been obvious over Polytec alone, and confine our further analysis to claims 1–12 based on Polytec alone.

We authorized Patent Owner to file a Supplemental Response to address the ground based on Polytec alone. Paper 16. We focus our attention on Patent Owner’s arguments in its Supplemental Response that go to the ground based on Polytec alone. *See id.* at 2–5, 11–15.

1. *Claim 1*

As noted above, we agree with Petitioner that Polytec discloses all of the limitations of claim 1, including the “embedded” limitation, with the exception of the “textured” limitation. Petitioner’s obviousness argument presumes that a narrow construction, like the one we adopt here, applies to “textured” such that Polytec does not disclose the limitation. Pet. 18.

Although Petitioner acknowledges, for purposes of its obviousness argument, that Polytec does not disclose the “textured” limitation using that construction, Petitioner argues that adding a texture to Polytec’s engine cover would have been an obvious matter of design choice. *Id.*

The Federal Circuit has cautioned that “[m]erely stating that a particular [limitation] is a design choice does not make it obvious. The Board must offer a reason for why a person of ordinary skill in the art would have made the specific design choice.” *Cutsforth, Inc. v. MotivePower, Inc.*, 636 F. App’x 575, 578 (Fed. Cir. 2016) (nonprecedential). On the other hand, the Federal Circuit has noted that the Board must find a claim invalid as obvious based on a design choice argument when the evidence warrants that finding. *See CRFD Research, Inc. v. Matal*, 876 F.3d 1330, 1347 (Fed. Cir. 2017) (reversing Board decision finding claims nonobvious because “a person of ordinary skill would have two predictable choices . . ., providing a person of ordinary skill with a simple design choice”); *Slot Speaker Techs., Inc. v. Apple Inc.*, 680 F. App’x 932, 944 (Fed. Cir. 2017) (nonprecedential) (reversing Board decision finding claims nonobvious because a person of skill in the art would have been familiar with costs and benefits of two “well-known design choices”); *ACCO Brands Corp. v. Fellowes, Inc.*, 813 F.3d 1361, 1367 (Fed. Cir. 2016) (reversing Board decision finding claims

nonobvious because ordinary artisan left with two design choices that are obvious combinations of prior art elements).

Here, Petitioner relies on the testimony of its expert, as well as Burr, in arguing that applying a texture was well known in the art. Pet. 18 (citing Ex. 1001 ¶¶ 90, 98–99, 342, 429; Ex. 1008, 6:65–67). Petitioner also relies on the prosecution history for the proposition that “the Examiner acknowledged these features as purely aesthetic and therefore not a basis for patentability.” *Id.* (citing Ex. 1003, 66–67, 103–104); *see also* Reply 15–16. Patent Owner argues that Petitioner’s cited evidence fails to establish that textured outer surfaces are well known, at least when considering adding a surface to a “medium-density core such as in the ’592 Patent.” PO Supp. Resp. 12. Patent Owner then argues that the expert testimony relied on in the Petition discusses art that involves higher density foam than that used in the ’592 patent, or relates to the combination of Polytec and Burr. *Id.* at 12–13.

Based on our review of the record, including the relevant expert testimony, we find that Petitioner establishes adequately that adding a textured surface to Polytec’s engine cover would have been obvious, as it involved a mere design choice. First, Petitioner supported adequately the argument that textured surfaces were known in the art. *See* Pet. 18 (citing Ex. 1001 ¶¶ 90, 98–99, 342, 429; Ex. 1008, 6:65–67). Patent Owner does not dispute that Burr discloses a textured coating that can be used on medium density polyurethane. In addition, the presence of textured coatings on products with higher density cores still supports Petitioner’s position that such coatings were at least known in the art.

Second, Petitioner established that one of ordinary skill in the art would have sought to add such a textured coating to an engine cover. Notably, Patent Owner does not dispute Petitioner’s proposed reasons for modifying Polytec to add the textured coating of Burr in the context of the Polytec/Burr obviousness ground, and those same reasons support adding the textured coating as a matter of design choice. *See* Pet. 49–51. For example, Petitioner argues that one of ordinary skill would find it obvious to include tactile characteristics on an engine cover “in order to provide an ‘optically enhanced’ design surface.” *Id.* at 51 (citing Ex. 1001 ¶¶ 90, 98, 342; Ex. 1007, 3:4–6). Petitioner supported its arguments with expert testimony, which in turn cites to supportive evidence. We find that testimony credible because it is adequately supported by the evidence of record. *See* Ex. 1001 ¶¶ 90 (characterizing “surface textures” as “known to be essential for visible automotive applications”), 98 (quoting prior art that notes ability to produce “fine surface detail”), 342 (noting Burr’s disclosure of textured surfaces, including embossing the film to create surface effect), 429). Based on the foregoing, we find that Petitioner has established that whether to include a textured surface, or not, was a mere matter of design choice, and that one of ordinary skill in the art would have had a reason to choose the textured surface over a non-textured surface.

2. Claims 2–12

We authorized Patent Owner’s Supplemental Response to address issues limited to the new ground we added to the case after our Institution Decision—obviousness based on Polytec alone. Paper 16. Patent Owner, however, went beyond the bounds of that grant of authority by addressing issues regarding the weight to be given to Petitioner’s expert (Dr.

Wagoner's) opinions, and his analysis of dependent claim limitations. *See* PO Supp. Resp. 5–11, 15. Those issues could have and should have been raised as part of Patent Owner's Response because they also go to the ground based on Polytec and Burr. *See id.*⁹ Our Institution Decision instituted on grounds that included the dependent claims, and reliance on Dr. Wagoner's opinions, and Patent Owner had an opportunity to respond to those findings in its Patent Owner Response.

Similarly, Patent Owner argues for the first time in its Supplemental Response that Polytec does not disclose a coating that “provides consistent color and UV protection” as required by claim 9. *Id.* at 14–15. Such an argument was responsive to our Institution Decision, which concluded that Polytec inherently discloses this limitation. *See* Inst. Dec. 11, 12, 16. For the same reasons stated in the previous paragraph, any argument that Polytec fails to disclose this limitation should have been included in Patent Owner's Response, and not added belatedly after we granted permission to file a Supplemental Response regarding the obviousness ground based on Polytec alone. Accordingly, we do not consider these new arguments raised for the first time in the Supplemental Response that relate to the grounds instituted in our Institution Decision, and we find those arguments waived.

Based on the foregoing, we do not consider Patent Owner's new arguments that go to grounds that were part of the Institution Decision, i.e., anticipation by Polytec and obviousness based on Polytec and Burr. Patent

⁹ These arguments generally assert that the opinions of Dr. Wagoner lack support and are conclusory, while these arguments themselves lack adequate development and are conclusory in nature. *See* PO Supp. Resp. 8–11, 15.

Owner does not present any arguments with respect to claims 2–12 based on Polytec alone that stem from our addition of that ground to the trial.

3. *Summary*

Based on the foregoing, after considering all of the *Graham* factors, we are persuaded that Petitioner has established, by a preponderance of the evidence, that claims 1–12 would have been obvious based on Polytec alone.

III. CONCLUSION

For all of the above reasons, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–19 of the '592 patent are unpatentable.

IV. ORDER

It is

ORDERED that claims 1–19 of the '592 patent have been shown to be unpatentable; 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.

IPR2017-01403
Patent 8,205,592 B2

For PETITIONER:

John S. Artz
Bryan J. Schomer
DICKINSON WRIGHT PLLC
jsartz@dickinsonwright.com
bschomer@dickinsonwright.com

For PATENT OWNER:

Jacob D. Koering
CANFIELD, PADDOCK & STONE
koering@millercanfield.com