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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HENKEL CORPORATION
Petitioner

v.

H.B. FULLER COMPANY
Patent Owner

Patent No. 6,833,404
Filing Date: APRIL 27, 1999
Issue Date: DECEMBER 21, 2004
Title: HOT MELTS UTILIZING A HIGH GLASS TRANSITION TEMPERATURE SUBSTANTIALLY ALIPHATIC TACKIFYING RESIN

Inter Partes Review No. IPR2014-00606

PATENT OWNER RESPONSE TO PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 6,833,404

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I. Introduction

In petitioning for *inter partes* review of U.S. Patent No. 6,833,404 ("the '404 patent"), Henkel Corporation ("Henkel") asserts that the Eastotac Brochure discloses "each and every element" of claims 22, 23, 25, 28, 31, and 32 of the '404 patent (Petition (Paper 1) at 13), and that the Exxon Reference discloses "each and every element" of claims 22-25 and 28 of the '404 patent (*id.* at 29). The Board decided to institute this proceeding based on Henkel's two alleged anticipation grounds, and thus Henkel's entire challenge to the '404 patent stands or falls on its two theories of anticipation. (Order (Paper 11) at 16 ("[T]he trial is limited to the grounds of unpatentability listed above, all other grounds presented in the petition are denied, and no other grounds of unpatentability are authorized for *inter partes* review.").)

Henkel fails to meet its burden of proving that the Eastotac Brochure or Exxon Reference discloses "each and every element" of the claims at issue. The Eastotac Brochure and Exxon Reference are both advertisements from the early 1990s that refer generally to resins, polymers, and various potential applications for resins. The generic information contained in these advertisements is consistent with the state of the prior art as described in the '404 patent. Henkel, however, then takes a leap by contending that these references not only disclose generic information but also disclose the specific invention claimed in the '404 patent.

The claims of the ’404 patent are directed to a specific “hot melt adhesive” that includes the combination of a hydrocarbon resin with a glass transition temperature above 65º C and a particular polymer. Neither the Eastotac Brochure nor Exxon Reference discloses the specific, claimed “hot melt adhesive.”

The Eastotac Brochure discloses thirteen different resins and at least ten diverse applications, with no mention of which particular resins are suitable for which particular applications. Henkel points to Table 3 of the Eastotac Brochure as disclosing general formulas for polymers, resins, and waxes in hot melt adhesives. Henkel also points to Table 1 as disclosing thirteen different resins, including one resin (H-142R) of the thirteen resins that has a glass transition temperature above 65º C. The ’404 patent similarly discloses the fact that H-142R resin was known in the prior art and “available from Eastman Chemical Co. in Kingsport, Tenn.” (’404 Patent (Ex. 1001) at 5:22-25.) Without any basis, Henkel then picks, chooses, and combines elements in the Eastotac Brochure and creates a composition that does not exist in the actual brochure. Henkel bases its entire anticipation argument on this phantom composition, and asserts that this phantom composition anticipates claims 22, 23, 25, 28, 31, and 32 of the ’404 patent.

This type of argument cannot provide grounds for unpatentability based on anticipation. Henkel’s “picking, choosing, and combining” of various disclosures within the Eastotac Brochure is improper in the context of an anticipation

argument. *In re Arkley*, 455 F.2d 586, 587 (C.C.P.A. 1972). Henkel appears to be making some type of "obvious to try" argument, but the Board has already ruled that Henkel may not offer any obviousness arguments for claims 22, 23, 25, 28, 31, or 32. (Order (Paper 11) at 16.)

The Exxon Reference advertises nineteen different resins available from Exxon, including one resin known as Escorez 5340, which has a glass transition temperature above 65º C. Again, the '404 patent discloses the fact that Escorez 5340 resin was known in the prior art and "available from Exxon Chemical Co." ('404 patent (Ex. 1001) at 6:22-24.) Without providing any basis, explanation, or evidence, Henkel then points to a composition listed in a footnote to the reference, which was apparently used for testing "wax cloud point" properties of Escorez 5340, and asserts that this particular composition constitutes the claimed "hot melt adhesive" without offering any proof that this composition would in fact constitute a "hot melt adhesive." Henkel offers no testing of any kind on the footnoted composition and fails to meet its burden of proof.

Henkel cannot simply declare that the footnoted composition constitutes a "hot melt adhesive," especially given that the composition set forth in the footnote contains an inordinately high amount of wax (40% paraffin wax) for the ethylene copolymer (Escorene UL 7750) listed in the footnoted composition. Henkel fails to explain to the Board how the composition in footnote 1 could avoid the

bondability problems that would result from the use of such a high concentration of wax. Henkel also fails to inform the Board that the specification of the '404 patent itself specifically warns against the creation of a composition that includes an ethylene copolymer and an amount of wax over 30% by weight, teaching that such a composition could result in "bondability" problems. (*See id.* at 9:51-59.) Henkel provides no evidence that the footnote 1 composition, which includes an ethylene copolymer and 40% wax, constitutes a "hot melt adhesive."

The '404 patent is clear that the invention is not the discovery of a particular type of resin, such as H-142R or Escorez 5340. Rather, the claimed invention is a particular "hot melt adhesive" that includes as one of its components a resin with a glass transition temperature above 65° C and also a particular polymer. Indeed, the inventors of the '404 patent, for the first time, found that "by utilizing tackifying resins with high T_g's, the total amount of resin may be decreased and quite surprisingly, the resultant adhesive compositions have better heat and cold temperature resistance." (*Id.* at 3:63-67.) The patent explains that the "tackifying resins useful in the present invention are predominantly aliphatic and have glass transition temperatures (T_g) of greater than 65º C." (*Id.* at 3:67-4:3.) The claims reflect this invention, requiring a "hot melt adhesive" with, among other things, a hydrocarbon tackifying resin with a "glass transition temperature of greater than 65º C." (*See, e.g.*, *id.* at cl. 22 & 28.) In leaping to its anticipation conclusions,

Henkel ignores the specific invention claimed by the '404 patent and ignores its burden of proof.

As explained in more detail below, Henkel has not shown that (1) the Eastotac Brochure anticipates claims 22, 23, 25, 28, 31, and 32 of the '404 patent or (2) the Exxon Reference anticipates claims 22-25 and 28 of the '404 patent. Henkel also fails to show that dependent claim 27 would have been obvious based on either the Eastotac Brochure or Exxon Reference in combination with Litz. The Board should therefore deny Henkel's Petition and confirm the validity of claims 22-25, 27, 28, and 31-32 of the '404 patent.

II. Background on Hot Melt Adhesives

A. Overview of Hot Melt Adhesives

Hot melt adhesives are adhesive materials that "are 100[%] solid thermoplastic materials that flow when heated" and then form a "final bond . . . when the temperature has fallen to the ambient one, i.e., that of the material being glued." (Hsu Decl. (Ex. 1015) ¶ 15.) Hot melt adhesives "can bond wide possible ranges of paper stock," (*id.*) and generally include "polymers, tackifying resins, and waxes" (*id.*). Hot melt adhesives also "have the distinct advantages of being capable of extremely high tack with medium to very fast setting speeds." (*Id.*)

B. Complexities in Formulating Hot Melt Adhesives

The selection of the particular polymer, resin, and wax components as well as the selection of the amounts of each component in the overall composition are important considerations in formulating a hot melt adhesive.

The '404 patent, for example, describes the "constant struggle on the part of adhesives chemists to improve both the heat resistance and cold temperature of hot melt adhesives." ('404 patent (Ex. 1001) at 1:39-47.) This struggle exists because "[h]igher heat resistance is generally achieved through the use of high levels of tackifying resin and/or higher levels of wax that will typically adversely affect the cold temperature resistance." (*Id.* at 1:48-51.) Meanwhile, the patent explains, good "cold temperature resistance is generally improved through the use of liquid components and/or higher levels of the polymer that will typically adversely affect the heat resistance." (*Id.* at 1:51-55.) Accordingly, as of 1998, it was "difficult to improve both of these two critical features of an adhesive formulation simultaneously, since generally one is improved at the expense of the other." (*Id.* at 1:57-60.)

In addition, persons of skill in the art not only looked to tackifiers and waxes for improving high temperature performance of hot melt adhesives, but also experimented with polymers and ways in which polymers could increase heat resistance. For example, as explained by Dr. Hsu, U.S. Patent No, 5,331,033 ("the

'033 patent") (Ex. 1019) "is directed to high heat resistance hot melt adhesives." (Hsu Decl. (Ex. 1015) ¶ 23.) The focus of the '033 patent, however, is on use of a particular polymer—"ethylene n-butyl acrylate copolymer." ('033 patent (Ex. 1019) at 2:10-22.)

It was also known that too much or too little of a given component could have adverse effects on important adhesive properties of a composition, such as bondability, speed of set, or heat resistance. The '404 patent, for example, explains that "[a]t higher wax levels, bondability of the adhesive system may be affected." ('404 patent (Ex. 1001) at 9:52-54.) The '404 patent then explains that "[a]t lower levels [of wax], the adhesive may set too slowly or heat resistance may adversely be affected." (*Id.* at 9:54-55.) In other words, too much wax can adversely affect bondability, and too little wax can adversely affect other important properties, such as speed of set and heat resistance. (*See* Hsu Dep. Tr. (Ex. 1039) at 243.)

The selection of a particular component may also have a direct effect on the type or amount of some other component of the hot melt adhesive. Of particular

relevance to this proceeding,[1] the '404 patent explains that the specific polymer used in a hot melt adhesive may dictate the type or amount of wax that is suitable for the composition. For example, the patent explains that if the composition includes an **ethylene copolymer**, then it is preferable to use wax in the amount of about 10% by weight to about 30% by weight of the composition. ('404 patent (Ex. 1001) at 9:57-59; *see also* Hsu Dep. Tr. (Ex. 1039) at 252:15-22.) Conversely, if the polymer is a homopolymer or copolymer of propylene, "it may be preferable to use less wax, for example, less than about 10 wt-%, or no wax at all, as it changes the compatibility of the system." ('404 patent (Ex. 1001) at 9:59-64.)

III. The '404 Patent

The '404 patent is directed to a specific hot melt adhesive that has advantages of strong performance at both high and low temperatures. In particular, the '404 patent is directed to a hot melt adhesive that includes a hydrogenated tackifying resin with a glass transition temperature over 65° C and also a particular polymer selected from the group consisting of copolymers and terpolymers of

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[1] See Section VIII.B.3, which explains that footnote 1of the Exxon Reference is inconsistent with the teachings of the '404 patent relating to the amount of wax that is acceptable when using an ethylene copolymer.

ethylene, amorphous polyalphaolefins, homogenous ethylene/α-olefin interpolymers, and mixtures thereof. (*E.g.*, '404 patent (Ex. 1001) at 1:12-18, cl. 22 & 28.)

As discussed above, particularly for packaging applications, it was critically important that a hot melt adhesive demonstrate both heat resistance and cold temperature resistance. (*Id.* at 1:41-47.) As of 1998, it was a "constant struggle" for adhesive chemists to simultaneously improve both the heat resistance and cold temperature resistance. (*Id.* at 1:39-47.) Skilled artisans typically improved heat resistance by increasing the concentration of the tackifying resin component or the wax component. (*Id.* at 1:48-51.) However, compositions with high concentrations of wax and/or tackifying resins resulted in compositions with poor cold resistance. High levels of wax would also adversely affect bondability. (*Id.* at 9:52-54.)

The inventors of the '404 patent discovered that good heat and cold temperature performance could be achieved with a specific hot melt adhesive that included a hydrocarbon tackifying resin with a glass transition temperature above 65° C and a polymer selected from the group consisting of copolymers and terpolymers of ethylene, amorphous polyalphaolefins, homogenous ethylene/α-olefin interpolymers, and mixtures thereof. Before the '404 patent, no one had demonstrated the ability to use this combination of a hydrocarbon tackifying resin

with a glass transition temperature above 65° C and polymer in a hot melt adhesive. In fact, while people had experimented with a different type of "high melting point phenolic modified terpene resins," (*id.* at 1:61-62), those types of resins had various problems associated with them, including not only cost but also safety hazards (*id.* at 1:61-2:3). The inventors of the '404 patent "found that by utilizing tackifying resins with high T_g's, the total amount of resin may be decreased, and quite surprisingly, the resultant adhesive compositions have better heat resistance and cold temperature resistance than conventional products." (*Id.* at 3:62-67.) In particular, the '404 patent disclosed that "tackifying resins useful to the present invention are predominately aliphatic and have a glass transition temperature (T_g) of greater than 65° C." (*Id.* at 3:67-4:3.)

Claims 22 and 28 of the '404 patent both require a "hot melt adhesive" with a hydrocarbon resin with a glass transition temperature of greater than about 65 °C. (*Id.* at cl. 22 & 28.) The resin of claim 22 must be "derived, at least in part, from dicyclopentadiene." (*Id.* at cl. 22.) The resin of claim 28 must be "aliphatic." (*Id.* at cl. 28.) With respect to the polymer, both claims 22 and 28 require "about 10% by weight to about 80% by weight of at least one thermoplastic base polymer selected from the group consisting of copolymers and terpolymers of ethylene, amorphous polyalphaolefins, homogenous ethylene/α-olefin interpolymer, and mixtures thereof." (*Id.* at cl. 22 & 28.)

Claims 23-25, 27, and 31 depend from independent claim 22. Claim 23 requires that the tackifying resin have a glass transition temperature "of greater than 68º C." (*Id.* at cl. 23.) Claim 24 requires that "greater than about 80%-wt of the total resin unit is derived from dicyclopentadiene." (*Id.* at cl. 24.) Claim 25 requires the tackifying resin be hydrogenated. (*Id.* at cl. 25.) Claim 27 requires the hot melt adhesive composition have a peel value of "greater than about 70º C." (*Id.* at cl. 27.) Claim 31 requires that the tackifying resin concentration "is less than said thermoplastic base polymer concentration." (*Id.* at cl. 31.) Claim 32 depends from independent claim 28 and requires that the tackifying resin concentration "is less than said thermoplastic base polymer concentration." (*Id.* at cl. 32.)

IV. Claim Construction: The Claims of the '404 Patent Require a Composition That Is a "Hot Melt Adhesive"

It is clear that the phrase "hot melt adhesive" in the preamble of claims 22 and 28 is a limitation for both claims 22 and 28, as well as for the claims that depend from those two claims.

"In general, a preamble limits the invention if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." *Varco, L.P. v. Pason Sys. USA Corp.*, 436 F.3d 1369, 1373 (Fed. Cir. 2006) (quotations omitted). This determination is made "on the facts of each case in light of the overall form of the claim, and the invention as described in the specification and

illuminated in the prosecution history." *Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1572-73 (Fed. Cir. 1996). In addition, a "preamble phrase that provides antecedent basis for a claim limitation generally limits the scope of the claim." *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1358 (Fed. Cir. 2012) (citations omitted).

In this case, the phrase "hot melt adhesive" provides "life, meaning, and vitality" to claims 22 and 28 and their dependent claims at issue in this proceeding. *Pitney Bowes, Inc. v. Hewlett–Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999). The entire purpose of the '404 patent relates to disclosing an improved "hot melt adhesive composition." (*E.g.*, '404 patent (Ex. 1001) at Abstract, 1:12-15, 2:60-63, 2:66-67.) As Dr. Hsu acknowledges, the abstract, the field of the invention, the background of the invention, the object of the invention, the summary of the invention, and the detailed description of the invention in the '404 patent all relate to and disclose a "hot melt adhesive composition." (Hsu Dep. Tr. (Ex.1039) at 49:1-52:13; *see also generally* '404 patent (Ex. 1001) at 1:1-13:18.) The examples and testing data in the '404 patent also relate to "hot melt adhesives." (*See, e.g.*, '404 patent (Ex. 1001) at 13:21-31 (describing method of preparing "[t]he **adhesives**" (emphasis added)); *see also id.* at 13:20-19:34 (describing examples of adhesives and tests performed on adhesives).) The claims of the '404 patent are

also clear that the invention is not to any composition, but to a "hot melt adhesive." (*E.g.*, *id.* at cl. 22 & 28.); *see also Deere & Co.*, 703 F.3d at 1358.

Moreover, the prosecution history of the '404 patent further confirms that the claims require a "hot melt adhesive." (*E.g.*, '404 Prosecution History (Ex. 2004) at 132 (describing the "**adhesive** compositions of the present invention"); *id.* at 242 ("In contrast, in the subject invention, the claimed **adhesive** composition includes a thermoplastic base polymer selected from the copolymer and terpolymers of ethylene, amorphous polyalphaolefins, homogeneous ethylene/a-olefin interpolymers, and mixtures thereof. Surprisingly, the claimed **adhesives** including the above selected base polymers, when combined with the high Tg tackifying resin(s), exhibit significantly improved heat resistance to much higher temperature . . . ."); *id.* at 243 (describing the "**adhesive** compositions of the subject invention"); *id.* at 244 (describing the "claimed **adhesive** compositions") (emphases added).)

In addition, because every composition that includes a resin and a polymer is not a "hot melt adhesive," the "recitation in the preamble serves to further define the structure for the ['hot melt adhesive']." *Ex parte Ingvarsson*, 2014 WL 2112327, at *4 (PTAB Apr. 30, 2014). For example, the remaining limitations of claims 22 and 28 generally recite a resin component and a polymer component without identifying the ultimate structure—"hot melt adhesive"—the patent clearly

requires. *Deere & Co.*, 703 F.3d at 1358; *see also Ex parte Ingvarsson*, 2014 WL 2112327, at *4; *Ex parte Larsen*, 2009 WL 3030342, at *3 (B.P.A.I. Sept. 22, 2009). "Hot melt adhesive" is a "fundamental characteristic of the claimed invention that informs one of skill in the art as to the structure required by the claim," as shown not only by the claims but also by the '404 patent specification. *Deere & Co.*, 703 F.3d at 1358 ("The specification further demonstrates that the preamble phrase 'rotary cutter deck' is a limitation. The specification repeatedly refers to the 'present invention' as 'an improved deck for a rotary cutter,' or a 'rotary cutter deck.'") (internal quotation and citation omitted). Thus, the preambles of claims 22 and 28, which recite a "hot melt adhesive composition" and a "hot melt adhesive," respectively, are necessary to "breathe[] life and meaning" into the claims, *Varco*, 436 F.3d at 1373, and are therefore limitations of the claims.

Finally, "hot melt adhesive" in the preamble of claims 22 and 28 is an antecedent for the term "[t]he adhesive" contained in claims 23-27 and 31-32. For example, claim 31 is directed to "**[t]he** adhesive composition of claim 22" and claim 32 is directed to "**[t]he** adhesive composition of claim 28." ('404 patent (Ex. 1001) at cl. 31-32 (emphasis added).) Thus, claim 22 and 28's preamble term "**[a]** hot melt adhesive" provides the antecedent basis for "**[t]he** adhesive" in claims 23-

27 and 31-32, further confirming that "hot melt adhesive" "limits the scope of [each] claim." *Deere & Co.*, 703 F.3d at 1358 (citations omitted).

For all of these reasons, Patent Owner requests that claims 22 and 28 and their dependent claims at issue in this proceeding be interpreted to require a "hot melt adhesive" as a claim limitation.

V. Overview of the Eastotac Brochure and Exxon Reference

A. Eastotac Brochure

The Eastotac Brochure ("the Eastotac Brochure") (Ex. 1002) is a marketing brochure produced by Eastman Chemical dated August 1992. The Eastotac Brochure is titled "*Eastotac* Hydrocarbon Resins" and advertises Eastman Chemical's diverse and extensive line of hydrocarbon resins. Table 1 of the brochure lists thirteen different resins: (1) H-100E; (2) H-100R; (3) H-100L; (4) H-100W; (5) H-115E; (6) H-115R; (7) H-115L; (8) H-115W; (9) H-130E; (10) H-130R; (11) H-130L; (12) H-130W; and (13) H-142R. (Eastotac Brochure (Ex. 1002) at Table 1.) The brochure also lists at least ten different and wide-ranging potential applications: (1) pressure sensitive adhesives; (2) hot melt adhesives; (3) caulks; (4) sealants; (5) rubber systems; (6) inks; (7) paints; (8) varnishes; (9) dry-cleaning solutions; and (10) investment casting and highway markings. (*Id.* at 4-5.)

The brochure does not provide any information concerning which of the particular thirteen resins are suitable for which of the particular ten or more applications. To the contrary, the brochure states that it is up to the customer to "select" the resin "most suitable for a particular application":

> *Eastotac* resins are available in four color levels with varying softening points which allow the **selection** of the resin most suitable for a particular application.

(*Id.* at 3 (emphasis added).)

B. Exxon Reference

The Exxon Reference ("the Exxon Reference") (Ex. 1003) is a marketing brochure by Exxon Chemical Company dated October 1990. The brochure, entitled "Specialty Polymers for Adhesives & Sealants," advertises Exxon's wide variety of resins, polymers, and other compounds. The Exxon Reference, for example, lists nineteen different Escorez tackifiers in five different "series." The nineteen tackifiers in the Exxon Reference have diverse physical properties. The range of glass transition temperatures spans more than 100º C, from -16º C to 85º C. Of the nineteen resins, Escorez 5340 is the only resin with an onset glass transition temperature over 65° C.[2] (*Id.* at 2.) The viscosity among the nineteen

[2] The Board correctly interpreted "glass transition temperature" in the claims of the '404 patent to mean "onset glass transition temperature." While there are other

resins varies by a factor of fifty. (*Id.*) Molecular weight, a key criterion in determining the heat resistance and strength of hot melt adhesives, varies by a factor of seven. (*Id.*) The Exxon Reference does not disclose any potential applications for the nineteen disclosed resins.

Footnote 1, which is the focus of Henkel's Petition, is not listed as a "hot melt adhesive." Rather, footnote 1 is the generic formula that Exxon apparently used to make compositions for purposes of reporting a "Wax Cloud Point" for sixteen of the nineteen Escorez resins.[3] (*See id.* at 2 n.1.) The wax cloud point is a measure of miscibility of components. (*See* Hsu Dep. Tr. (Ex. 1039) at 229.) As reported by Exxon, the wax cloud point for Escorez 5340 is 70º C, which is also the melting point of the 158º F MP Paraffin Wax used in the footnote 1 composition. (*See* Exxon Reference (Ex. 1003) at 2 & n.1.) The wax cloud point of 70º C indicates that above 70º C the composition is clear and the components are miscible. (Hsu Dep. Tr. (Ex. 1039) at 232:8-235:19.)

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resins in the Exxon Reference that have a midpoint glass transition temperature above 65º C, Escorez 5340 is the only resin with an **onset** glass transition temperature above 65º C.

[3] Exxon did not report a wax cloud point for the three resins in the 9000 Series Emulsions. (*See* Exxon Reference (Ex. 1003) at 2.)

As conceded by Dr. Hsu, a wax cloud point test is not a test of adhesive properties of a composition. A wax cloud point test, for example, is not a bonding test. (*Id.* at 235.) A wax cloud point test is also not a test of the adhesive or cohesive strength of a composition. (*Id.* at 236:1-6.) And a wax cloud point test does not indicate tensile strength. (*Id.* at 236:16-18.) In short, a wax cloud point test by itself does not show whether or not a composition is adhesive, let alone whether it is a "hot melt adhesive."

VI. The Board Should Give Dr. Hsu's Opinions Little, If Any, Weight

The Board should give Dr. Hsu's opinions little weight. Dr. Hsu, for example, did not require a person of ordinary skill in the art to have any experience working with hot melt adhesives. Dr. Hsu himself also has no experience working with hot melt adhesives. Dr. Hsu also has a long and established relationship with Henkel and is not an independent expert witness.

A. Dr. Hsu Did Not Require a Person of Ordinary Skill in the Art to Have Experience Working with Hot Melt Adhesives

The level of ordinary skill in the art is relevant to both anticipation and obviousness. An anticipatory reference must "place a person of ordinary skill in the art in possession of the invention." *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1082 (Fed. Cir. 2008). Thus, how a person of ordinary skill in the field of the invention "view[s]," *Scripps Clinic & Res. Found. v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991), *overruled on other grounds by Abbott Labs. v.*

Sandoz, Inc., 566 F.3d 1282 (Fed. Cir. 2009), and "understand[s]" the prior art reference is "of critical importance," *Osram Sylvania, Inc. v. Am. Induction Techs., Inc.*, 701 F.3d 698, 706 (Fed. Cir. 2012). And for obviousness, the entire inquiry concerns whether a person of ordinary skill in the art would have found the invention obvious as of the date of invention. *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1966).

Here, the entire invention of the '404 patent relates to "improved hot melt adhesive compositions." (*E.g.*, '404 patent (Ex. 1001) at Abstract, 1:12, 2:60-3:51; *see also id.* cl. 22 & 28.) As acknowledged by Dr. Hsu, the '404 patent's abstract, field of the invention, background of the invention, object of the invention, summary of the invention, and detailed description of the invention all relate to and disclose a "hot melt adhesive composition." (Hsu Dep. Tr. (Ex. 1039) at 49:1-52:13; *see also* '404 patent (Ex. 1001).) The '404 patent also includes extensive examples and testing of hot melt adhesives. Moreover, formulation of hot melt adhesives requires knowledge of the components of a hot melt adhesive and knowledge of the relationship between the components and their effects on a hot melt adhesive. (*See, e.g.*, '404 patent (Ex. 1001) at 1:39-60.) A person of ordinary skill in the art for the '404 patent certainly would have had experience working with hot melt adhesives.

In forming his opinions, however, Dr. Hsu did not require a person of ordinary skill in the art to have any experience working with hot melt adhesives. In Dr. Hsu's opinion, a person of ordinary skill in the art simply needs "at least two years of experience" in the very broad and undefined "field of polymer science and engineering." (Hsu Decl. (Ex. 1015) ¶ 27; *see also* Hsu Dep. Tr. (Ex. 1039) at 48:3-13 (confirming that he did not apply any other definition of a person of ordinary skill in the art).) When pressed on this point at his deposition, Dr. Hsu confirmed that he did not require a person of ordinary skill in the art to have any experience working with hot melt adhesives:

> Q: And in forming your opinions in this case, you did not require the person of ordinary skill – the person of ordinary skill in the art to have any experience working with hot melt adhesives. Correct?
>
> A: That is correct.

(Hsu Dep. Tr. (Ex. 1039) at 48:14-18.) In fact, Dr. Hsu refused to back off of his rather extreme position, testifying that, in his opinion, a person of ordinary skill in the art need not have any experience "formulating hot melt adhesives" (*id.* at 44:10-14), "characterizing hot melt adhesives" (*id.* at 44:15-19), "experimenting with hot melt adhesives" (*id.* at 44:20-45:2), "analyzing the adhesive properties of hot melt adhesives" (*id.* at 45:8-12), or "analyzing cohesive properties of hot melt adhesives" (*id.* at 45:13-17).

Dr. Hsu's opinion that a person of ordinary skill in the art need not have any experience working with hot melt adhesives is not reasonable. The '404 patent is directed exclusively to hot melt adhesives and formulating hot melt adhesives. By not requiring a person of ordinary skill in the art to have any experience working with hot melt adhesives, Dr. Hsu did not analyze the '404 patent and prior art from the correct perspective. *See, e.g.*, *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1376-78 (Fed. Cir. 2012); *Osram Sylvania*, 701 F.3d at 706.

B. Dr. Hsu Does Not Have Any Experience Working with Hot Melt Adhesives

Dr. Hsu's opinions are also deserving of little weight given that he has no experience working with hot melt adhesives:

> Q: And, sir, as of today, is it fair to say that you do not have any experience working with an actual hot melt adhesive?
>
> A: Correct.

(Hsu Dep. Tr. (Ex. 1039) at 48:19-22.) Dr. Hsu further confirmed that he has never "made" a hot melt adhesive, never "formulated" a hot melt adhesive, never "analyzed" a hot melt adhesive, never done any "experiments" on a hot melt adhesive, and has never done any "testing" on a hot melt adhesive. (*Id.* at 34, 36-38.)

C. Dr. Hsu Has an Established Relationship with Henkel

It also bears noting that Dr. Hsu is not an independent third-party expert witness, but rather, has had a long and prosperous relationship with Henkel. Dr. Hsu has worked with Henkel and National Starch, which was acquired by Henkel, for the past sixteen years. (*Id.* at 15:16-20.) Over the course of this relationship, Dr. Hsu has received about $1.4 million from Henkel[4] for funding his research. (*Id.* at 17:19-22.) Dr. Hsu estimates that this year alone he expects to receive about $125,000 in research funding from Henkel. (*Id.* at 27:15-20.) Over the course of his sixteen-year relationship with Henkel, Dr. Hsu has worked with about thirty different people from Henkel (*id.*at 20:21-21:3) and has published a number of articles with Henkel employees, including one very recently (*id.* at 24:6-25:3). Dr. Hsu also currently serves on Henkel's "science advisory board." (*Id.* at 15:16-20.) Dr. Hsu is not an unbiased witness.

VII. Claims 22, 23, 25, 28, 31, and 32 Are Not Anticipated by the Eastotac Brochure

Henkel has not and cannot show by a preponderance of the evidence that the Eastotac Brochure discloses each and every limitation of claims 22, 23, 25, 28, 31, or 32 of the '404 patent. *See* 35 U.S.C. § 316(e) (petitioner bears burden of

[4] "Henkel" in this context includes both Henkel and National Starch, which was acquired by Henkel in recent years.

proving invalidity by preponderance of the evidence). Accordingly, the Board should confirm that the Eastotac Brochure does not anticipate claims 22, 23, 25, 28, 31, or 32 of the '404 patent.

A. Henkel Ignores the Legal Standard for Anticipation, Which Prohibits "Picking, Choosing and Combining"

Henkel's Petition provides almost no discussion of the legal standard for anticipation. "Invalidation on [anticipation] requires that every element and limitation of the claim was previously described in a single prior art reference, either expressly or inherently, so as to place a person of ordinary skill in possession of the invention." *Sanofi-Synthelabo*, 550 F.3d at 1082. Stated another way, anticipation requires that "the claimed subject matter *is* identically disclosed or described in 'the prior art.'" *Arkley*, 455 F.2d at 587 (emphasis original).

To prove anticipation under this standard, Henkel must show by a preponderance of the evidence that the reference "not only disclose[s] all elements of the claim within the four corners of the document, but . . . also disclose[s] those elements 'arranged as in the claim.'" *Sanofi-Synthelabo*, 550 F.3d at 1083 (quoting *Net MoneyIN, Inc. v. VeriSign*, 545 F.3d 1359, 1369 (Fed. Cir. 2008)). In addition, Henkel must prove that the reference "disclose[s] the claimed compound or direct[s] those skilled in the art to the compound without *any* need for picking, choosing and combining various disclosures not directly related to each other by the teachings of the cited reference." *Arkley*, 455 F.2d at 587 (emphasis original).

Henkel must similarly show that there is "no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." *Scripps Clinic*, 927 F.2d at 1576.

B. The Eastotac Brochure Does Not Disclose a Specific "Hot Melt Adhesive" with H-142R

Contrary to Henkel's assertion, the Eastotac Brochure does not disclose a "hot melt adhesive" with H-142R resin. As explained above, the Eastotac Brochure is simply marketing material for Eastman Chemical's hydrocarbon resins. (Eastotac Brochure (Ex. 1002) at 1-2.) To that end, Table 1 lists thirteen different resins sold by Eastman Chemical. Among the thirteen resins, there is a single resin (H-142R) that has a glass transition temperature above about 65° C. (*Id.* at 4-5.) The Eastotac Brochure also lists at least ten different and diverse potential applications for its resins, which range from pressure sensitive adhesives, caulks, hot melt adhesives, and sealants to rubber systems, inks, paints, varnishes, dry-cleaning solutions, and investment casting and highway markings. (*Id.*) The Eastotac Brochure does not identify which of the particular resins are suitable for which particular application, but instead instructs "the **selection** of the resin most suitable for a **particular application**." (*Id.* at 3 (emphasis added).)

Henkel focuses on Table 1 and Table 3 of the brochure, but neither table discloses a "hot melt adhesive" with H-142R. Table 1 merely lists Eastman's thirteen resins without identifying any specific applications for any of the specific

resins. Table 3, in turn, discloses general (and well known) formulas for hot melt adhesives, but does not identify any specific resin from Table 1, let alone H-142R. (*See* Hsu Dep. Tr. (Ex. 1039) at 168:21-171:19, 172:20-176:5.) In fact, the only information about a resin in Table 3 is under the column for "Materials," which merely states "*Eastotac* resin" and does not identify a specific resin. (Eastotac Brochure (Ex. 1002) at Table 3.)

The lack of disclosure in Table 1 or Table 3 of a "hot melt adhesive" with H-142R resin is confirmed by Dr. Hsu's deposition testimony. Dr. Hsu testified that Table 1 does not identify a specific application for any of the thirteen listed resins. (Hsu Dep. Tr. (Ex. 1039) at 87:1-106:11.) For example, Dr. Hsu testified:

> Q. Table 1 of the Eastotac brochure also does not disclose whether or not H-142R can be used with hot melt adhesives. Correct?
>
> A. That is correct.
>
> . . . .
>
> Q. And so looking at Table 1, for the 13 resins that are shown in Table 1, Table 1 does not disclose any particular application for any of the 13 resins. Correct?
>
> A. If you're talking about Table 1, it's not listed there.

> Q. Right. So just looking at Table 1, just looking at Table 1, Table 1 does not disclose any applications for the resins listed in Table 1. Correct?
>
> A. Correct.

(*Id.* at 104:17-20, 106:2-11.)

Dr. Hsu similarly testified that Table 3 does not identify any particular resins for use in hot melt adhesives. (*Id.* at 113:4-122:4.) Dr. Hsu specifically testified:

> Q. And then Table 3 of the Eastotac brochure, Exhibit 1002, does not identify the H-142R resin. Correct?
>
> A. Correct.

(*Id.* at 115:2-5.) It is therefore undisputed that Table 3 uses the phrase "Eastotac resin" without identifying any specific resin.

Because the Eastotac Brochure does not disclose a "hot melt adhesive" with H-142R resin, the Eastotac Brochure falls far short of disclosing an anticipating "hot melt adhesive" for claims 22, 23, 25, 28, 31, or 32 of the '404 patent. *Net MoneyIN*, 545 F.3d at 1371 ("We thus hold that unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate.").

C. Henkel's "Picking, Choosing, and Combining" Argument Is Improper and Insufficient to Prove Anticipation

Given that there is no disclosure in the Eastotac Brochure of a "hot melt adhesive" with a specific resin (let alone H-142R), Henkel has no choice but to pick, choose, and combine the disclosures in Table 1 and the disclosures in Table 3 in an effort to create a phantom composition for purposes of anticipation. Henkel first argues that Table 3 discloses general ranges for components of a "hot melt adhesive." Henkel next selects H-142R from Table 1 as a resin that has a glass transition temperature above 65º C. Henkel then finally combines H-142R resin with the disclosure in Table 3. (Petition (Paper 1) at 14-17; Hsu Decl. (Ex. 1015) ¶¶ 41-42, 53-55.) Henkel's argument is not allowed by established law, which prohibits "picking, choosing and combining" in an anticipation analysis. *See, e.g.*, *Net MoneyIN*, 545 F.3d at 1371; *Arkley*, 455 F.2d at 587.

In *Arkley*, the U.S. Court of Customs and Patent Appeals explained that for anticipation, a single reference must "disclose the claimed compound or direct those skilled in the art to the compound without *any* need for picking, choosing and combining various disclosures not directly related to each other by the teachings of the cited reference." *Id.* (emphasis original). Applying this principle, the Board recently explained that it is not enough that "the ordinary artisan might somehow combine" multiple, distinct teachings "to achieve the claimed invention." *Symantec Corp. v. RPost Comms. Ltd.*, Case No. IPR2014-00357, Decision

Institution of *Inter Partes* Review, 20 (PTAB July 15, 2014) (Paper 14) (citing *Arkley*, 455 F.2d at 587). Thus, "picking and choosing . . . has no place in the making of a 102, anticipation rejection." *Arkley*, 455 F.2d at 587-88; *see also Net MoneyIN*, 545 F.3d at 1371 ("Thus, it is not enough that the prior art reference discloses part of the claimed invention, which an ordinary artisan might supplement to make the whole, or that it includes multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention.").

The same law applies here. The Eastotac Brochure lists thirteen resins available for sale by Eastman Chemical in Table 1, but does not list any applications for the resins. The Eastotac Brochure also lists at least ten different and wide-ranging potential applications for resins, but does not identify which of the thirteen resins are suitable for which of the ten or so applications. Rather, the brochure leaves "**selection**" of the "resin most suitable for a particular application" to the customers. (Eastotac Brochure (Ex. 1002) at 3 (emphasis added).)

Under these circumstances, the disclosures in Table 1 and Table 3 cannot anticipate any of the claims, because they do not identify or otherwise direct a person of ordinary skill to choose a single resin (much less H-142R) out of a list of thirteen resins in Table 1 as suitable for use in the composition disclosed in Table 3. Nothing in the teachings of the Eastotac Brochure, or in the tables specifically, "directs those skilled in the art to make this selection," nor is there

"any indication that [Eastman] ever made the selection [itself]." *Arkley*, 455 F.2d at 588. Thus, because Henkel cannot "read into references things that are not there," the Eastotac Brochure cannot anticipate claims 22, 23, 25, 28, 31, or 32 of the '404 patent. *See id.*; *see also Net MoneyIN*, 545 F.3d at 1371 ("But differences between the prior art reference and a claimed invention, however slight, invoke the question of obviousness, not anticipation.").

D. Henkel's Own Evidence Further Undermines Its Anticipation Argument

As a final point, one of the very documents that Dr. Hsu relies on in this proceeding—the '033 patent—further undermines Henkel's assertion that a person of ordinary skill in the art would understand the Eastotac Brochure as disclosing H-142R in a "hot melt adhesive." The '033 patent is titled "Hot Melt Adhesive" and includes scientists from National Starch and Chemical, which is now part of Petitioner Henkel Corporation. (*See* '033 patent (Ex. 1019).) As Dr. Hsu admits, the '033 patent "is directed to high heat resistance hot melt adhesives." (Hsu Decl. (Ex. 1015) ¶ 23.) The '033 patent was filed on February 23, 1993, about six months after the alleged publication date of the Eastotac Brochure. Yet, while the '033 patent identifies two resins from Table 1 of the Eastotac Brochure—H-100 and H-130—as suitable for its hot melt adhesive, the '033 patent does not so much as mention H-142R. (*See* '033 patent (Ex. 1019) at 3:4-5.) This shows that before

the invention of the '404 patent, people of ordinary skill in the art elected not to use H-142R in hot melt adhesives.

* * *

For all the reasons discussed above, Henkel has not and cannot show that the Eastotac Brochure discloses a hot melt adhesive with a resin—namely, H-142R—that has a glass transition temperature above 65º C. Thus, the Board should confirm that the Eastotac Brochure does not anticipate claims 22, 23, 25, 28, 31, or 32 of the '404 patent.

VIII. Claims 22-25 and 28 Are Not Anticipated by the Exxon Reference

Henkel has not and cannot establish by a preponderance of the evidence that the Exxon Reference discloses each and every limitation of claims 22-25 and 28. 35 U.S.C. § 316(e). Accordingly, the Board should confirm that the Exxon Reference does not anticipate claims 22-25 and 28 of the '404 patent.

A. Henkel Must Prove That the Exxon Reference Discloses "Each and Every Element" of the Claims, Including the "Hot Melt Adhesive" Limitation

Just as Henkel is limited to a theory of anticipation for the Eastotac Brochure, Henkel is similarly limited to a theory of anticipation for the Exxon Reference. Henkel must therefore show that the Exxon Reference discloses each and every limitation of the instituted claims by a preponderance of the evidence. *See* 35 U.S.C. § 316(e). To meet this burden of proof, Henkel must show not only

that the Exxon Reference discloses a composition with a tackifying resin and polymer that falls within the claims, but also that the composition from the Exxon Reference is in fact a "hot melt adhesive." In other words, because "hot melt adhesive" is a limitation of claims 22-25 and 28 of the '404 patent, it is not sufficient for Henkel to merely identify a composition that includes a tackifying resin and polymer that falls within the ranges of the claims; the composition must also be a "hot melt adhesive." For example, a composition that includes a tackifying resin and polymer that falls within limitations "a)" and "b)" of claims 22 and 28, would plainly not anticipate claim 22 or claim 28 if the composition was not also a "hot melt adhesive."

B. Henkel Fails to Prove That the Exxon Reference Discloses a "Hot Melt Adhesive" with Escorez 5340

Here, the Exxon Reference does not say anything about a "hot melt adhesive," which is a limitation of all of the claims. Henkel nonetheless tries to create an anticipation argument by asserting—without any basis—that a composition in footnote 1, which Exxon apparently used only for testing of wax cloud point properties for Escorez 5340, constitutes a "hot melt adhesive" and anticipates claims 22-25 and 28 of the '404 patent. (Petition (Paper 1) at 29-38.) Henkel, however, provides no evidence that the footnote 1 composition is a "hot melt adhesive." Henkel not only fails to show that the footnote 1 composition is a "hot melt adhesive," but Henkel also ignores the '404 patent's express teachings

that the amount of wax in the footnote 1 composition (40% paraffin wax) would lead to "bondability" problems that would prevent it from resulting in the claimed "hot melt adhesive." ('404 Patent (Ex. 1001) at 9:52-59 (explaining that too much wax may adversely affect "bondability" of a composition, and that when the composition includes an ethylene copolymer, the composition should not include more than 30% wax).)

Henkel cannot ignore the claim limitations requiring a "hot melt adhesive." Henkel therefore fails to meet its burden of proving anticipation based on the Exxon Reference.

1. The Exxon Reference does not suggest that the wax cloud point composition in footnote 1 is a "hot melt adhesive"

The Exxon Reference provides no evidence to support Henkel's assertion that the footnote 1 composition for Escorez 5340 is a "hot melt adhesive." The Exxon Reference does not mention a "hot melt adhesive" or suggest that the resins and polymers being advertised could be used in a "hot melt adhesive." (*See* Hsu Dep. Tr. (Ex. 1039) at 216:1-3.) In fact, the Exxon Reference does not mention any applications for any of the listed resins—the Exxon Reference is simply an advertisement for resins and polymers. (*See* Exxon Reference (Ex. 1003); Hsu Dep. Tr. (Ex. 1039) at 225:13-228:13.)

In addition, the footnote 1 composition was used solely for reporting wax cloud point properties of the resins. As Dr. Hsu admits, a wax cloud point test is

not a test of adhesive properties of a composition. A wax cloud point test, for example, is not a bonding test (Hsu Dep. Tr. (Ex. 1039) at 235), is not a test of the adhesive or cohesive strength of a composition (*id.* at 236:1-6), and is not an indication of tensile strength (*id.* at 236:16-18). A wax cloud point test by itself simply does not show whether or not a composition is adhesive, let alone whether it is a "hot melt adhesive."

2. Henkel offers no evidence showing that the wax cloud point composition in footnote 1 is a "hot melt adhesive"

The only support Henkel provides is Dr. Hsu's conclusory assertion that the footnote 1 composition is a "hot melt adhesive." (Hsu Decl. (Ex. 1015) ¶¶ 67-68.) But Dr. Hsu admitted that he "did not actually make" the footnote 1 composition for 5340, did not conduct any tests on the footnote 1 composition for 5340, and did not analyze any of the properties of the footnote 1 composition for 5340. (Hsu Dep. Tr. (Ex. 1039) at 220:11-222:10.) Dr. Hsu's declaration does not even say anything about whether the footnote 1 composition for 5340 would be adhesive, let alone whether or not it would have the properties of a "hot melt adhesive," including whether, in his words, it would form a "final bond . . . when the temperature has fallen to an ambient one, i.e., that of the material being glued," (Hsu Decl. (Ex. 1015) ¶ 15), "bond wide possible ranges of paper stock," (*id.*), or "have the distinct advantage of being capable of extremely high tack with medium to very fast setting speeds" (*id.*). It is clear that in his declaration, Dr. Hsu simply

assumed that the footnote 1 composition for 5340 met the "hot melt adhesive" limitation of claims 22-25 and 28 without ever making or otherwise analyzing the composition to determine whether or not it actually was a "hot melt adhesive." This unsupported assumption is not entitled to any weight. *See* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.").

Dr. Hsu's conclusory and unsupported opinion does not come close to meeting Henkel's burden of proving that the footnote 1 composition for Escorez 5340 is a "hot melt adhesive." *ZTE Corp. v. ContentGuard Holdings, Inc.*, IPR2013-00137, Final Written Decision, 24-31 (PTAB July 1, 2014) (Paper 58) (holding the petitioner "has not demonstrated by a preponderance of the evidence" that the prior art anticipated the instituted claims because "the underlying facts [of prior art] do not support adequately [the expert's] conclusion"); *see also Panasonic Corp. v. Optical Devices, LLP*, IPR2014-00302, Decision, 13-15 (PTAB July 11, 2014) (Paper 9).

3. Henkel's assertion that the wax cloud point composition in footnote 1 is a "hot melt adhesive" is inconsistent with the teachings of the '404 patent

Henkel's failure of proof is compounded by the fact that Henkel's anticipation argument is inconsistent with the teachings of the '404 patent. The '404 patent makes clear that not every composition constitutes a "hot melt

adhesive." It includes clear warnings not to use too much or too little wax, as the amount of wax may adversely affect bondability and other properties of the composition. The patent, for example, warns that "[a]t higher wax levels, bondability of the adhesive system may be affected." ('404 Patent (Ex. 1001) at 9:52-54.) Dr. Hsu acknowledged that this sentence in the patent refers to the fact that at higher wax levels, "the higher amount of wax can adversely affect the bondability of an adhesive system." (Hsu Dep. (Ex. 1039) at 240:4-8.) The patent also explains that at "lower levels [of wax], the adhesive may set too slowly or heat resistance may adversely be affected." ('404 Patent (Ex. 1001) at 9:54-55.)

The specification then gives specific examples of proper wax ranges for hot melt adhesives that include particular polymers. In particular, the '404 patent instructs that when using an **ethylene copolymer** in the hot melt adhesive, it is preferable to use wax in an amount of about 10% to 30% by weight of the composition: "When the thermoplastic polymer is an **ethylene copolymer**, it is preferable to use from about 10% by weight to about 30% by weight of the composition." (*Id.* at 9:57-59 (emphasis added).) On the other hand, if the polymer is a homopolymer or copolymer of propylene, "it may be preferable to use less wax, for example, less than about 10 wt-%, or no wax at all, as it changes the compatibility of the system." (*Id.* at 9:59-64.) Thus, as Dr. Hsu acknowledged, if a person is trying to make a "hot melt adhesive" with an **ethylene copolymer**, the

'404 patent teaches that it is preferable to use from about 10 percent by weight to about 30 percent by weight of wax. (Hsu Dep. Tr. (Ex. 1039) at 252:15-22.)

The footnote 1 composition in the Exxon Reference is inconsistent with the teachings of the '404 patent. The footnote 1 composition uses 20% of the polymer Escorene UL 7750, which, as Dr. Hsu admits, is an **ethylene copolymer**. (*Id.* at 203:15-204:4; *see also* Exxon Reference (Ex. 1003) at 3 ("Escorene EVAs").) Thus, the '404 patent teaches that if one were trying to make a "hot melt adhesive" with Escorene UL 7750, which is an **ethylene copolymer**, the composition should not have more than about 30% by weight of wax. ('404 Patent (Ex. 1001) at 9:57-59; Hsu Dep. Tr. (Ex. 1039) at 252:15-22.) However, the footnote 1 composition uses "40% of 158 ºF MP Paraffin Wax." (Exxon Reference (Ex. 1003) at 2 n.1.) This 40% of wax is an amount much higher than the '404 patent's preferred range of 10-30% wax for making a "hot melt adhesive" with an ethylene copolymer. ('404 patent (Ex. 1001) at 9:57-59.) The '404 patent, moreover, specifically warns that "higher wax levels" may have adverse effects on the "bondability" of the composition. (*Id.* at 9:52-53; Hsu Dep. (Ex. 1039) at 240:4-8.) Thus, the '404 patent suggests that the footnote 1 composition has too much wax, will have bondability problems, and will therefore not result in the claimed "hot melt adhesive."

Dr. Hsu's declaration does not even mention the '404 patent's discussion of how high wax levels adversely affect bondability or how when working with an ethylene copolymer, the wax component should remain within the range of 10-30% by weight of the composition. Nor does Dr. Hsu provide any analysis of any kind of the footnote 1 composition, let alone analyze how the high level of 40% wax in the footnote 1 composition affected the composition's bondability. (*See* Hsu Dep. Tr. (Ex. 1039) at 254:20-257:4.) Rather, in forming his opinions, Dr. Hsu failed to consider the clear discrepancy between the footnote 1 composition's use of 40% wax and the '404 patent's teaching that the wax should not exceed 30% when working with an ethylene copolymer. (*See* Hsu Decl. (Ex. 1015) ¶¶ 67-68; Hsu Dep. Tr. (Ex. 1039) at 244:6-14, 254:13-19.) He also never made the footnote 1 composition, let alone conducted any tests or analysis of any kind to assess the composition's bondability or adhesive properties. (Hsu Dep. Tr. (Ex. 1039) at 220:11-222:10.)

Accordingly, Henkel's and Dr. Hsu's conclusory assertion that the footnote 1 composition is a "hot melt adhesive" is insufficient to meet Henkel's burden of proof, especially where the amount of wax in the footnote 1 composition is inconsistent with the teachings of the '404 patent.

* * *

For all these reasons, Henkel has not and cannot show that the footnote 1 composition in the Exxon Reference discloses a "hot melt adhesive." Thus, the Board should confirm that the Exxon Reference does not anticipate claims 22-25 and 28 of the '404 patent.

IX. Claim 27 Is Not Obvious in View of (a) Eastotac Combined with Litz or (b) Exxon Combined with Litz

To show claim 27 is obvious, Henkel must prove by a preponderance of the evidence that, as of the date of invention, a "skilled artisan would have had reason to combine the teaching of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success from doing so." *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068-69 (Fed. Cir. 2012). Under this standard, Henkel must show, among other things, "how or where the references differ from the challenged claims, how one of ordinary skill would go about combining their disparate elements, or what modifications one of ordinary skill in the art would necessarily have made in order to combine the disparate elements." *Ariosa Diagnostics v. Verinata Health, Inc.*, IPR2013-00276, Final Written Decision, 11-12, 16 (PTAB Oct. 23, 2014) (Paper 43) (quoting *In re Kahn*, 441 F.3d 977 (Fed. Cir. 2006)); *see also Redline Detection, LLC v. Star Envirotech, Inc.*, IPR2013-00106, Final Written Decision, 22 (PTAB June 30, 2014) (Paper 66) (explaining that there "must be some reasoning supported by rational

underpinnings to combine the references to achieve the invention recited in the challenged claims").

Here, there are a number of different reasons why Henkel fails to show that claim 27 would have been obvious to a person of ordinary skill in the art.

1. By not requiring a person of ordinary skill in the art to have any experience with hot melt adhesives, Dr. Hsu did not assess obviousness from the perspective of a person of ordinary skill in the art. *See Graham*, 383 U.S. at 36; *Mintz*, 679 F.3d at 1376-78.

2. Henkel's obviousness argument is premised on the Eastotac and/or Exxon References anticipating claim 22. Given that Henkel failed to meet its burden of showing anticipation of claim 22 by either reference, its obviousness arguments also fail.

3. Henkel fails to explain the significant differences between the resins in Litz and the resins in the Eastotac/Exxon references and claim 27. The Litz reference discloses the use of phenolic, polyterpene, and dimeric derived resins. (Litz (Ex. 1005) at 3.) These resins are specifically mentioned and disclaimed in the '404 patent as being undesirable in the claimed invention. ('404 patent (Ex. 1001) at 1:61-66.) In particular, the '404 patent acknowledges that high heat resistance "has been achieved through the use of high melting point **phenolic modified terpene resins**. However, there are safety hazards associated with the

production of such resins due to the toxicity of phenol." (*Id.* (emphasis added).) Litz uses these phenolic resins to achieve high heat resistance, and does not use hydrocarbon resins derived at least in part from dicyclopentadiene, as required by claim 27. Litz is therefore directly at odds with the teaching of the '404 patent. *See Ariosa*, IPR2013-00276, Paper 43 at 16-19 (explaining that, to show obviousness, a party must show "**how or where the references differ from the challenged claims**, how one of ordinary skill would go about combining their disparate elements, or what modifications one of ordinary skill in the art would necessarily have made in order to combine the disparate elements" (emphasis added)). Dr. Hsu, moreover, never acknowledges the differences between the resins in Litz and the resins in the Eastotac/Exxon References and claim 27, and he also never considers or analyzes the impact the differences would have on the obviousness analysis or the alleged "suggested . . . routine modification." (Hsu Decl. (Ex. 1015) ¶ 85.)

4. Henkel and Dr. Hsu also do not explain how one of ordinary skill in the art would combine Eastotac/Exxon with Litz to arrive at claim 27. Dr. Hsu, for example, asserts that "Rule 41 requires that the hot melts maintain a bond (i.e., peel value) in temperatures between -20º F and +165º F (-29º C and 74º C)." (Hsu Decl. (Ex. 1015) ¶ 85.) Dr. Hsu then asserts that "Litz suggested the routine modification of the compositions of the Eastotac Brochure and the Exxon

Reference to obtain a peel value of greater than about 70 ºC, as recited in claim 27 of the '404 patent." (*Id.*) But Dr. Hsu provides no explanation of how one of ordinary skill in the art would modify a particular composition from the Eastotac Brochure or Exxon Reference to arrive at a hot melt adhesive that falls within the scope of claim 22 and that also has a peel value greater than about 70 ºC, as required by claim 27.

Accordingly, for all of these reasons, Henkel fails to show that claim 27 would have been obvious to a person of ordinary skill in the art based on a combination of the Eastotac Brochure and Litz or the Exxon Reference and Litz. *See Ariosa*, IPR2013-00276, Paper 43 at 16-17 (concluding that petitioner "failed to prove by a preponderance of the evidence that [the asserted claims] would have been unpatentable" because "virtually no effort is made to explain how or where the references differ from the challenged claims, how one of ordinary skill in the art would go about combining their disparate elements, or what modifications one of ordinary skill in the art would necessarily have made in order to combine the disparate elements").

X. Conclusion

For all the foregoing reasons, H.B. Fuller respectfully requests that the Board find that: (1) claims 22, 23, 25, 28, 31, and 32 of the '404 patent are not anticipated by the Eastotac Brochure; (2) claims 22-25 and 28 of the '404 patent

are not anticipated by the Exxon Reference; and (3) claim 27 of the '404 patent is not obvious in view of the Eastotac Brochure or the Exxon Reference in combination with Litz.

February 3, 2015

Respectfully Submitted,

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APPENDIX 1: CURRENT LIST OF PATENT OWNER EXHIBITS

Exhibit No.	Description	Previously Submitted
2001	Declaration of Timothy E. Grimsrud	X
2002	Second Declaration of Timothy E. Grimsrud	X
2003	Updated Due Date Schedule	X
2004	Prosecution History File for U.S. Patent No. 6,833,404 ("the '404 patent")	

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6, I hereby certify that I caused a true and correct copy of the **Patent Owner Response to Petition for *Inter Partes* Review of U.S. Patent No. 6,833,404** and accompanying **Exhibit 2004** to be served via electronic mail on the following:

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