

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID J. LUNSFORD,
RAJEEV FARWAHA,
and JAMES WALKER

Appeal 2008-4023
Application 10/875,849
Technology Center 1700

Decided: November 26, 2008

Before BRADLEY R. GARRIS, CHUNG K. PAK, and PETER F. KRATZ,
Administrative Patent Judges.

PAK, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1 through 11 and 13 through 25, all of the pending claims in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 6.

We AFFIRM.

STATEMENT OF THE CASE

The subject matter on appeal is directed to “carpet coating compositions which contain an ethylene/vinyl ester-based emulsion binder . . . ” (Spec. 1, ll. 1-4). These compositions are said to “exhibit improved adhesion to polyvinylbutyral substrates” (*id*). The carpet coating compositions may require a specific amount, any amount, or no amount of polyvinyl alcohol depending on the claims involved (claims 1, 18, and 23).

Details of the appealed subject matter are recited in representative independent claims 1, 8, 18, 19, and 23 reproduced below¹:

1. A carpet coating composition, comprising:

a) an interpolymers having a Tg in the range of about 0 to about -40°C present in amounts effective to function as a binder in the carpet coating composition, said interpolymers prepared by an emulsion polymerization process which includes:

(i) one or more vinyl ester monomers;

(ii) ethylene;

(iii) from about 1 ppm to 10 ppm of at least one carboxylic acid functional monomer;

(iv) water;

¹ Appellants have presented substantive arguments for patentability of claims 1, 8, 18 through 21, and 23 on appeal (App. Br. 4-16 and Reply Br. 2-12). Therefore, for purposes of this appeal, we select claims 1, 8, 18 through 21, and 23 and decide the propriety of these grounds of rejection set forth in the Answer based on these representative claims alone consistent with 37 C.F.R. § 41.37(c)(1)(vii) (2005).

(v) stabilizing system comprising polyvinyl alcohol and one or more surfactants, where the polyvinyl alcohol is present in amounts of from about 2 to about 5 ppm; and

(vi) optionally, one or more comonomers or multi-functional comonomers wherein the carpet coating composition exhibits increased adhesion to a polyvinyl butyral substrate, as compared to a like coating prepared with a like interpolymers which does not contain carboxylic acid functional monomer.

8. The composition of claim 2 wherein the composition provides a delamination average load of at least 10 lbs on a polyvinyl butyral substrate.

18. The carpet product of claim 10 wherein the carpet coating composition and the PVB layer have a delamination average load of at least 10 lbs.

19. A carpet product, comprising:

(a) a primary carpet backing;

(b) carpet fibers attached to the primary carpet backing;

(c) an adhesive carpet coating composition in contact with the primary carpet backing, wherein the carpet coating composition includes polyvinyl alcohol, one or more surfactants, and an interpolymers comprising:

i) one or more vinyl ester monomers;

ii) ethylene; and

iii) from about 1 ppm to 10 ppm of at least one functional monomer, and

(d) a secondary carpet backing comprising at least one polyvinyl butyral (PVB) layer, wherein the PVB layer is affixed to the primary carpet backing with the adhesive carpet coating composition.

23. A carpet product which includes:

a) a primary backing;

b) a binder coating in contact with the primary backing, wherein the binder coating includes an aqueous adhesive emulsion composition comprising an interpolymer and a stabilizing system which has one or more protective colloids and one or more surfactants; wherein the interpolymer comprises vinyl ester, ethylene, and from about 1 ppm to about 10 ppm of carboxylic acid functional monomer; and

c) a secondary backing comprising at least one polyvinyl butyral layer affixed to the primary backing such that the binder coating is between the primary backing and the secondary backing.

As evidence of unpatentability of the appealed subject matter, the Examiner has proffered the following prior art references:

Anderson	4,010,301	Mar. 1, 1977
Lunsford	5,849,389	Dec. 15, 1998
Bell	2004/0175535 A1	Sep. 9, 2004

The Examiner has rejected the claims on appeal as follows:

1) Claims 1 through 11, and 24 under 35 U.S.C. § 102(b) as anticipated by, or under 35 U.S.C. § 103(a) as unpatentable over, the disclosure of Lunsford; and

2) Claims 13 through 23, and 25 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Lunsford, Bell, and Anderson.

Appellants appeal from the Examiner's decision rejecting the claims on appeal under 35 U.S.C. §§ 102(b) and 103(a).

RELEVANT FACTUAL FINDINGS (FF)

The factual findings set forth below are supported by a preponderance of the evidence:

1. Lunsford teaches a coating composition comprising an interpolymer prepared by emulsion polymerization of about 10 pphm to about 30 pphm of ethylene, about 60 pphm to about 90 pphm of a vinyl ester monomer, 1 to 10 pphm of an essentially non-reactive monomer (ENR), up to 5 pphm of optional comonomers, and water (col. 1, l. 65 to col. 2, l. 33 and col. 6, ll. 25-30).

2. Lunsford teaches (col. 4, ll. 4-18) that:

It may also be desired to incorporate in the interpolymer minor amounts of one or more functional comonomers [corresponding to the claimed at least one carboxylic acid functional monomer]. Suitable copolymerizable comonomers include, for example, acrylic and methacrylic acid or the half esters of maleic acid such as monoethyl, monobutyl or monoctylmaleate . . . butanediol diacrylate, allyl methacrylate, etc, as well as C₂-C₃ hydroxyalkyl esters such as hydroxyethyl acrylate, hydroxyl propyl acrylate and corresponding methacrylates. The latter comonomers generally are used at levels of less than 5 pphm, preferably less than 2.5 pphm, depending upon the nature of the specific comonomer. Preferably, the emulsion binders are prepared without the use of such monomers.

3. Lunsford teaches (col. 6, ll. 9-20):

Various protective colloids may also be used in place of or in addition to the emulsifiers described above. Suitable

colloids include casein, hydroxyethyl starch, carboxyethyl [sic.] cellulose, gum arabic, and the like, as known in the art of synthetic emulsion polymer technology. In general, these colloids are used at levels of 0.05 to 4% by weight based on the total emulsion. Poly(vinyl alcohol) PVA-based protective colloids generally are not preferred for use in preparing the emulsion binders, although low levels may be tolerated. Preferably, the emulsion binders are prepared in the essential absence of PVA colloids and more preferably are prepared in the absence of PVA colloids.

4. Lunsford teaches the emulsifiers employed are surfactants (col. 5, ll. 18-55).
5. Lunsford exemplifies interpolymers having a Tg in the range of -1.8° to 1.3° C, which are prepared from, *inter alia*, 12 pphm of ethylene, 84 or 85 pphm of vinyl acetate, and butyl acrylate and/or p-carboxy ethylacrylate corresponding to the claimed at least one carboxylic acid functional monomer to provide excellent and/or very good adhesion properties at different temperatures (col. 8, l. 1 to col. 9, l. 40).
6. Lunsford exemplifies carpet coating formulations containing, *inter alia*, a dispersant (a surfactant), acrylate thickener, and interpolymers made of ethylene, vinyl acetate and 4 pphm of one or more specific functional monomers which according to Appellants' claim 1 and Declaration, are responsible for the claimed delamination average loads (increased adhesive properties) toward a PVB substrate. (*Compare* Lunsford's Examples at col. 7, l. 41 to col. 9, l. 40, with Table 1 at paragraph 7 of the Declaration and claim 1's functional language).
7. It can be inferred from Lunsford that its non-preferred functional comonomers (ingredients) are useful for its carpet coating compositions

since Lunsford shows in its examples that its non-preferred functional comonomer are shown to impart excellent and very good adhesion to its carpet coating compositions (col. 9, ll. 1-41).

8. Lunsford teaches that the coating composition may further contain “a filler, a thickener, a defoamer, a frothing agent, and a dispersant in amounts effective to perform their respective intended function”(col. 2, ll. 11-15 and col. 6, ll. 39-54).

9. Lunsford teaches (col. 2, ll. 34-57):

We now have found that emulsion polymers prepared . . . provide superior binders for use in *carpet backings, particularly for use in carpet backed with PVC plastisol*

The coating compositions of the present invention advantageously are utilized in the production of *conventional* tufted carpet, no-tufted carpet and needle-punched carpet and are dried using equipment which is readily available in most carpet mills. Thus, the coatings are useful in the production of pile carpets comprising a primary backing with pile yarns extending from the primary backing to form pile tufts; as well as non-tufted carpets wherein the fibers are embedded into a binder composition which has been coated onto a woven or non-woven substrate. In addition, the tuft-lock adhesive coating can be loaded to a high degree with a filler . . . without adversely affecting the adhesive properties of the coating.
[Emphasis added.]

10. Lunsford teaches that in preparing a conventional carpet, applying its coating composition on the backside of a primary backing having yarns tufted or needled into the front side thereof and laminating a secondary backing made of suitable foam polymer or copolymer, such as polymers or copolymers of ethylene, propylene, isobutylene, and vinyl chloride, on the

backside of the primary backing to provide dimensional stability (col. 6, l. 55 to col. 7, l. 14).

11. However different are the adhesive strengths of Lunsford's carpet coating compositions toward different conventional backing materials, Lunsford teaches that they are sufficient for the purpose of preparing conventional carpet products (*id*).

12. Bell teaches employing PVB (polyvinyl butyral) as a substitute for PVC carpet backings in manufacturing conventional carpets (p. 1, para. [0001], p. 3, para. [0022], and pp. 4-5, paras. [0040] and [0041]).

13. Anderson teaches a carpet product comprising, *inter alia*, a thermoplastic face layer having fibers attached thereto and additional thermoplastic backing layers which are bonded to the backside (non-fiber side) of the thermoplastic face layer (col. 2, l. 66 to col. 5, l. 17 and the drawing).

14. Anderson teaches that the thermoplastic material used for making the face and other additional layers for its carpet product can be a foam rubber selected from, among others, vinyl polymers, polybutene resins, polyisobutene resins, but preferably from "a vinyl polymer such as polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, polyvinyl acetal, polyvinyl butyral, copolymers of any of these vinyl polymers and mixtures thereof" (col. 3, l. 60 to col. 4, l. 67).

15. The Rule 132 Declaration executed by one of the co-inventors in the above-identified application on September 18, 2006 (hereinafter referred to as "Declaration") states that:

4. That the '389 *Lunsford patent*, of which the declarant is the sole inventor, is in no way related to carpet products which

have a PVB backing and, instead, concerns coating compositions which adhere to PVC substrates that are conventionally used as carpet backing materials. That, many coating chemistries exhibit good adhesion to PVC substrates, but it is notoriously difficult to achieve suitable adhesion with PVB substrates. On this point, he has personal knowledge that the coating compositions prepared according to the *Lunsford* reference exhibit low adhesion to PVB surfaces.

5. The coating compositions disclosed in the '389 *Lunsford* reference are, in his opinion, not suggestive of the claimed coating compositions, because the *Lunsford* reference discourages the use of functional monomers and polyvinyl alcohol colloids--important aspects in the claimed composition. That the *Lunsford* patent specifically states that only low quantities of PVOH colloid may be present, which, to a person ordinarily skilled in the art of emulsions, would suggest that they should only be present in quantities significantly lower than what is needed to effectively stabilize the polymer emulsion. Accordingly, in his technical opinion, the *Lunsford* reference is not suggestive of an emulsion that contains about 2 to about 5 ppm of PVOH colloid as is embodied in independent claim 1.

6. Further, that PVB substrates differ substantially from PVC substrates in their physical and chemical properties. And that, specifically, the adhesion properties of PVC substrates in no way mimic and are not predictive of the adhesion properties of PVB substrates. As noted above, it has been discovered that PVB requires more selective coating chemistries to achieve acceptable adhesion. In this regard, a person of ordinary skill in the art of coatings would not expect a given carpet coating composition would be interchangeable from a PVC backing to a PVB backing. That independent claim 19 of the pending application recites a carpet product having a PVB backing and a coating composition which includes functional monomer, surfactant, and PVOH colloid; the subject matter of claim 19 is,

in his opinion, clearly distinguishable over the *Lunsford* patent which is wholly unrelated to PVB products.

16. The Declaration further states that:

7. That the coating composition that was discovered in connection with the present invention is unexpected in view of the *Lunsford* patent, and that the adhesion results seen by the present invention are surprisingly good. Table 1, of the pending application illustrates the superior adhesion properties with PVB substrates:

TABLE 1

Binder	VA	E	PVOH	S ¹	AA ²	Avg ³
Control ⁵	80	20	3.5	x	0	7
Control ⁿ	84	16	4.2	x	3	9
A	72	28	3.5	1.1	0	12
B	72	28	3.5	1.1	0.5	16
C	72	28	3.5	1.1	1.0	17
D	72	28	3.5	1.1	2.0	19
E	72	28	3.5	1.1	3.5	22
F	72	28	3.5	1.1	3.0	22

¹S = Surfactant (anionic)

²AA = Acrylic Acid

³Avg = Delamination Average Load (lbs)

⁵Commercial PVOH stabilized EVA adhesive base

The degree of adhesion achieved with increasing amounts of acrylic acid was unexpected. As can be seen from the above table, coating compositions of the invention having PVOH, a surfactant, and a carboxylic functional monomer, readily achieve improvements in PVB adhesion, in some instances, by more than double, and sometimes more than triple, compared to conventional vinyl acetate/ethylene binders. It is also surprising that the composition exhibited substantially reduced adhesion when no surfactant present.

17. According to pages 15 through 19 of the Specification, binders A, B, C, D, E, and F referred to at Table 1 in the Declaration are formed at specific mixing and reaction conditions.

18. The Declaration is executed by one of the Appellants, who authored Lunsford relied upon by the Examiner, and therefore, Appellants were in a better position than the Examiner to determine what amount does not constitute the tolerable amounts of polyvinyl alcohol colloids taught by Lunsford.

19. The Declaration does not provide any objective or factual evidence to show that Lunsford's tolerable amounts of polyvinyl alcohol colloids do not constitute the claimed amounts of polyvinyl alcohol.

20. It is not clear from Table 1, referred to in the Declaration, that the allegedly improved delamination average loads reflective of adhesive properties are due to the presence of an anionic surfactant, different amounts of vinyl acetate, ethylene, and acrylic acid in the exemplified interpolymers, the specific amounts of a specific anionic surfactant, acrylic acid, vinyl acetate, ethylene, and PVOH, or the specific mixing and reaction conditions employed in preparing the exemplified binders described in the Specification.

21. The cause-and-effect relationship, which Appellants desire to show between a surfactant and binder adhesion properties (delamination average load) or acrylic acid and binder adhesion properties in the Declaration, is lost in multiple unfixed variables.

22. Nowhere does Table 1, referred to in the Declaration, compare the claimed invention with the exemplified embodiments of Lunsford, which are closest to the claimed invention.

23. While carpet coating compositions A, B, C, D, E, and F representative of the claimed subject matter referred to in Table 1 are limited to those produced under specific mixing and reaction conditions and those having specific proportions of a specific anionic surfactant, acrylic acid, vinyl acetate, ethylene, and PVOH, claims 1, 8, 18 through 21, and 23 are not so limited.

24. Claims 1, 8, 18 through 21, and 23 not only include those carpet coating compositions having materially different proportions of the same ingredients, but also include those carpet coating compositions produced from materially different processes than that taught at pages 15 through 19 of the Specification and having materially different ingredients than those exemplified in Table 1.

25. Paragraph 6 of the Declaration does not provide a sufficient factual foundation to doubt the veracity or accuracy of the teachings of Lunsford, Bell, and Anderson.

26. Appellants have not proffered any factual or objective evidence to show that Lunsford's carpet coating compositions are not useful for PVB foam backings used in conventional tufted carpets.

PRINCIPLES OF LAW

As stated by the predecessor to our reviewing court in *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977):

Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product... Whether the rejection is based on “inherency” under 35 USC 102, on “prima facie obviousness” under 35 USC 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO’s inability to manufacture products or to obtain and compare prior art products.
[Footnotes and citations omitted.]

Moreover, “there is nothing intrinsically wrong with [defining something by what it does rather than what it is] in drafting patent claims.” *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). Yet, choosing to define a component functionally, i.e., by what it does, carries with it a risk. *Schreiber*, 128 F.3d at 1477. As our reviewing court stated in *Schreiber*, 128 F.3d at 1477 quoting *In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971):

Where the patent Office has reason to believe that a function limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.

Appellants cannot overcome a prima facie case of anticipation under 35 U.S.C. § 102 by a showing of unexpected results. *In re Malagari*, 499 F.2d 1297, 1302 (CCPA 1974).

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level

of ordinary skill in the art; and (4) secondary considerations, if any. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). “[A]nalysis [of whether the subject matter of a claim would have been prima facie obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co., v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-41 (2007)); *see also DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006) (“The motivation need not be found in the references sought to be combined, but may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself”); *In re Hoeschele*, 406 F.2d 1403, 1406-407 (CCPA 1969) (“[I]t is proper to take into account not only specific teachings of the references but also the inferences which one skilled in the art would reasonably be expected to draw therefrom”). “[T]he fact that a specific [embodiment] is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered” *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989); *see also In re Boe*, 355 F.2d 961, 965 (CCPA 1966). “[W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007) (*quoting Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282 (1976)). “When a work is available in one field of endeavor, design incentives and other market forces can prompt

variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *KSR*, 127 S. Ct. at 1740.

“[W]here the prior art gives reason or motivation to make the claimed [invention] . . . the burden (and opportunity) then falls on an applicant to rebut that prima facie case. Such rebuttal or argument can consist of . . . any other argument or presentation of evidence that is pertinent.” *In re Dillon*, 919 F.2d 688, 692-93 (Fed. Cir. 1990) (*en banc*).

Appellants bear the burden of showing that the claimed invention imparts unexpected results. *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997); *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). “While we do not intend to slight the alleged improvements, we do not feel it an unreasonable burden on appellants to require comparative examples relied on for non-obviousness to be truly comparative. The cause and effect sought to be proven is lost here in the welter of unfixed variables.” *In re Dunn*, 349 F.2d 433, 439 (CCPA 1965).

Such a truly comparative showing must be derived from a comparison between the claimed subject matter and the closest prior art (*In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991); *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984)) and must be reasonably commensurate with the scope of protection sought by the claims on appeal (*In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983); *In re Clemens*, 622 F.2d 1029, 1035 (CCPA 1980)); *See also In re Harris*, 409 F.3d 1339, 1344 (Fed. Cir. 2005) which states:

The Board also correctly reasoned that the showing of unexpected results is not commensurate in scope with the degree of protection sought by the claimed subject matter because the elemental composition of CMSX®-486 is at or near the midpoint of the claimed range. While Harris's evidence may show a slight improvement over some alloys, the record does not show that the improved performance would result if the weight-percentages were varied within the claimed ranges. Even assuming that the results were unexpected, Harris needed to show results covering the scope of the claimed range.

Appellants' mere arguments in the Brief or conclusory statements in the Specification cannot take the place of objective evidence. *See, e.g., In re De Blauwe*, 736 F.2d at 705; *In re Lindner*, 457 F.2d 506, 508 (CCPA 1972).

ANALYSIS, ISSUE, AND CONCLUSION OF LAW

I. REJECTION OF CLAIMS 1-11, AND 24 BASED ON LUNSFORD

As correctly found by the Examiner, Lunsford teaches carpet coating compositions comprising an interpolymer prepared by emulsion polymerization of ethylene, a vinyl ester monomer, a non-reactive monomer, less than 5 ppm of one of more desirable optional functional comonomers corresponding to the claimed at least one carboxylic acid functional monomer, an emulsifying surfactant, water, protective colloids, and optionally PVA (poly vinyl alcohol)-based protective colloids (Answer 4-5 and FF 1-8). The interpolymers exemplified in Lunsford have a Tg in the range of -1.8° C. to 1.3° C., which are inclusive of those having the claimed Tgs (FF 5). The interpolymers exemplified in Lunsford also have, *inter alia*, at least one functional comonomers corresponding to the claimed at least one

carboxylic acid functional monomer, which according to claim 1, provides the claimed functional adhesive properties (FF 5).

Appellants' primary contention is that Lunsford does not teach or would have suggested the amount of polyvinyl alcohol recited in claim 1 and the functional property recited in claim 8 (App. Br. 5-11).

Thus, the initial question is: Does Lunsford teach or suggest "about 2 to about 5 ppm of polyvinyl alcohol" as recited in claim 1 and "a delamination load of at least 10 lbs on a PVB substrate" as recited in claim 8. On this record, we answer this initial question in the affirmative.

As to the claimed amount of polyvinyl alcohol, Lunsford teaches that "[p]oly(vinyl alcohol) PVA-based protective colloids generally are not preferred for use in preparing the emulsion binders, although low levels may be tolerated" (FF 3). Lunsford's carpet coating composition containing, *inter alia*, a tolerable amount of polyvinyl alcohol protective colloids is said to provide superior binders for use in conventional carpet backings which embrace those backings made of a polyvinyl butyral material (FF 3, 7, and 9). Thus, it is not unreasonable for the Examiner to shift the burden to Appellants to show that the claimed amount of polyvinyl alcohol defined in an unusual functional or relative manner (part per hundred monomer used) excludes Lunsford's tolerable amount of polyvinyl alcohol colloids in its carpet coating composition. This is especially true in this situation since Appellants are in a better position to determine what amounts of polyvinyl alcohol are tolerable to Lunsford's carpet coating composition (FF 18).

To the extent that the range of the tolerable amounts taught by Lunsford is outside of the claimed amount of polyvinyl alcohol, we still

determine that Lunsford does not preclude one of ordinary skill in the art from employing the amount of polyvinyl alcohol recited in claim 1. As correctly stated by the Examiner, Lunsford's non-preferred embodiment (i.e., employing the claimed amount of polyvinyl alcohols) cannot be ignored. Indeed, Lunsford shows that its composition still has excellent or very good adhesion (as opposed to excellent adhesion) even when it employed non-preferred p-carboxy ethylacrylate in its carpet coating composition (FF 7). This showing reasonably conveys to one of ordinary skill in the art that Lunsford's carpet coating composition is still useful even when non-preferred ingredients, including the claimed amount of polyvinyl alcohol, are employed in its carpet coating composition (*id*).

As to the delamination load of at least 10 lbs on a PVB substrate recited in claim 8, Lunsford exemplifies carpet coating compositions containing, *inter alia*, a dispersant (a surfactant), acrylate thickener, and interpolymers made of ethylene, vinyl acetate and 4 pphm of one or more specific functional monomers which according to Appellants' Declaration are responsible for the claimed delamination average load (increased adhesive properties) toward a PVB substrate. The Examiner has a reasonable basis to believe that Lunsford's exemplified carpet coating compositions containing, *inter alia*, a dispersant and 4pphm of one or more specific functional monomers corresponding to the claimed at least one carboxylic acid functional monomer exhibit the claimed delamination average load .

Under the above circumstances, we determine that the Examiner has established a prima facie case of either anticipation or obviousness regarding

the subject matter defined by claims 1 through 11 and 24 within the meaning of 35 U.S.C. §§ 102 (b) and 103(a).

As a rebuttal to the prima facie case established by the Examiner, Appellants contend that the claimed subject matter is taught away from Lunsford and imparts unexpected results relative to that shown in Lunsford (App. Br. 4-10 and Reply Br. 2-12). In support of this contention, Appellants rely on a Rule 132 Declaration executed by one of the inventors (Lunsford) listed in the subject application on September 18, 2006 (hereinafter referred to as “Declaration”) (*id.*).

The second critical question is, therefore, is the Declaration sufficient to show that the claimed subject matter is taught away from Lunsford and/or imparts unexpected results relative to Lunsford relied upon by the Examiner? On this record, we answer this question in the negative.

As argued by Appellants, the Declaration states that Lunsford relied upon by the Examiner “is in no way related to carpet products which have a PVB backing . . .” (App. Br. 9; Reply Br. 3; and FF 15). However, claims 1 and 8 do not require carpet products having a PVB backing. Moreover, Lunsford, which is authored by the same declarant in the Declaration, does not foreclose one of ordinary skill in the art from using its carpet coating compositions to bind other conventional backing materials, such as those made of PVB backings. Although Lunsford focuses on a PVC backing, it teaches that its carpet coating compositions can be used for the production of any conventional tufted carpets, including those having a backing material made of any polymer or copolymer foam (FF 9-10). On this record, Appellants have not proffered any factual or objective evidence to show that

Lunsford's carpet coating compositions are not useful for PVB foam backings used in conventional tufted carpets (FF 26).

Appellants also rely on the Declaration to show that Lunsford “discourages the use of functional monomers [corresponding to the claimed at least one carboxylic acid functional monomer] . . . ” in forming its interpolymer used in a carpet coating composition (App. Br. 8; Reply Br. 2; and FF 15). Although Lunsford does not prefer certain functional comonomers, it teaches that “it may also be *desired* to incorporate in the interpolymer minor amounts [, i.e., less than 5pphm] of one or more functional comonomers” (FF 2). In fact, Lunsford exemplifies (actually employs) those binders (interpolymers) containing, *inter alia*, butyl acrylate corresponding to the claimed at least one carboxylic acid functional monomer as having excellent adhesion at 280° F and 260° F and a binder (interpolymer) containing, *inter alia*, unpreferred p-carboxy ethylacrylate corresponding to the claimed at least one carboxylic acid functional monomer as having excellent adhesion at 280° F and very good adhesion at 260° F (FF 5-7). It follows that Lunsford teaches that its preferred and non-preferred functional comonomers are useful for its interpolymer binders used in carpet coating compositions (FF 7).

Appellants further rely on the Declaration to show that Lunsford “discourages the use of . . . polyvinyl alcohol colloids” in its carpet coating compositions (App. Br. 7-8; Reply Br. 2; and FF 15). However, as indicated *supra*, Lunsford teaches employing tolerable amounts of polyvinyl alcohol colloids corresponding to the claimed amount of polyvinyl alcohol in its carpet coating compositions (FF 3). Appellants have not supplied any

objective evidence in the Declaration to show that Lunsford's tolerable amounts do not constitute the claimed amounts of polyvinyl alcohol even though Appellants are in a better position to determine what constitutes the tolerable amounts of polyvinyl alcohol colloids taught by Lunsford (FF 18).

To the extent that the tolerable amounts of polyvinyl alcohol colloids in Lunsford's carpet coating compositions are shown to be outside of the claimed amounts of polyvinyl alcohol, we are of the view that Lunsford still would have suggested employing any non-preferred amounts of polyvinyl alcohol colloids, including those claimed, in its carpet coating compositions since Lunsford shows in its examples that its non-preferred ingredient is still useful for its carpet coating compositions (FF 7). Just as Lunsford's non-preferred functional comonomer is shown to be useful for imparting excellent and very good adhesion to its carpet coating compositions, Lunsford's non-preferred amount of polyvinyl alcohol colloids is expected to be useful for its carpet coating compositions (*id*).

Finally, Appellants rely on the Declaration to show that Table 1 at page 19 of the subject application exhibits that:

The degree of adhesion achieved with increasing amounts of acrylic acid was unexpected. . . . It is also surprising that the composition exhibited substantially reduced adhesion when no surfactant [was] present. [App Br. 14-16; Reply Br. 11; and FF 16.]

Appellants cannot overcome a prima facie case of anticipation under 35 U.S.C. § 102 by a showing of unexpected results.

For the prima facie case of obviousness, Appellants must demonstrate that Table 1 referred to in the Declaration, in fact, shows that the claimed

subject matter imparts unexpected results. On this record, however, Appellants have not met their burden of proof.

First, it is not clear from Table 1 that the allegedly improved delamination average loads reflective of adhesive properties are due to the presence of an anionic surfactant, different amounts of vinyl acetate, ethylene and acrylic acid in the exemplified interpolymers, the specific amounts of a specific anionic surfactant, acrylic acid, vinyl acetate, ethylene, and PVOH, or the specific mixing and reaction conditions employed in preparing the exemplified binders (FF 20). The cause-and-effect relationship, which Appellants desire to show between a surfactant and binder adhesion properties (delamination average load) or acrylic acid and binder adhesion properties, is lost in multiple unfixed variables (FF 21).

Secondly, the results shown in Table 1 are not based on a comparison between the claimed invention and the closest prior art. Nowhere does Table 1 compare the claimed invention with the exemplified embodiments of Lunsford, which are closest to the claimed invention (FF 22). Lunsford exemplifies carpet coating formulations containing, *inter alia*, a dispersant (surfactant), acrylate thickener, and interpolymers made of ethylene, vinyl acetate and one or more specific functional monomers, without or tolerable amounts of polyvinyl alcohol colloids (FF 6).

Finally, the showing in Table 1 is not reasonably commensurate with the degree of protection sought by claim 1 on appeal. While carpet coating compositions A, B, C, D, E, and F representative of the claimed subject matter are limited to those having specific proportions of a specific anionic surfactant, acrylic acid, vinyl acetate, ethylene, and PVOH and to those

produced under specific mixing and reaction conditions, claims 1 and 8 are not so limited (FF 23). Claims 1 and 8 not only include those carpet coating compositions having materially different proportions of the same ingredients, but also include those carpet coating compositions produced from materially different processes than that taught at pages 15 through 19 of the Specification and having materially different ingredients than those exemplified in Table 1 (FF 24).

Accordingly, based on the totality of record, including due consideration of Appellants' arguments and evidence, we determine that the preponderance of evidence weighs most heavily in favor of anticipation or obviousness regarding the subject matter recited in claims 1 through 11 and 24 within the meaning of 35 U.S.C. § 102(b) or § 103(a).

II. REJECTION OF CLAIMS 13 THROUGH 23, AND 25 BASED ON LUNSFORD, BELL, AND ANDERSON

As indicated *supra*, Lunsford teaches a conventional carpet product comprising a primary backing having yarned tufted or needled into its front side, a coating composition affixing a secondary backing made of suitable foam polymer or copolymer, such as polymers or copolymers of ethylene, propylene, isobutylene, and vinyl chloride, on the backside of the primary backing to provide dimensional stability (FF 9-10). Lunsford also exemplifies carpet coating compositions containing, *inter alia*, a dispersant (a surfactant), acrylate thickener, and interpolymers made of ethylene, vinyl acetate and 4 pphm of one or more specific functional monomers which according to Appellants' Declaration, are responsible for the delamination

average load toward a PVB substrate recited in claims 18, 20, and 21 (FF 6). The Examiner has a reasonable basis to believe that Lunsford's exemplified carpet coating compositions containing, *inter alia*, a dispersant and 4pphm of one or more specific functional monomers corresponding to the claimed at least one carboxylic acid functional monomer exhibit the claimed delamination average load.

Although Lunsford does not specifically mention a PVB secondary backing, both Bell and Anderson teach that the PVB secondary backing is conventionally used in a conventional carpet product (FF 12-14). Anderson also teaches that its PVB secondary foam backing is interchangeable with other conventional secondary foam backings, some of which are taught by Lunsford (FF 14 and 10). Thus, we concur with the Examiner that it would have been *prima facie* obvious employ a conventional secondary backing, such as that made of a PVB foam or other conventional polymer foams, as the secondary backing of the carpet product suggested by Lunsford.

Appellants contend that one of ordinary skill in the art would not have been led to employ a conventional PVB foam secondary backing as the secondary backing of the carpet product taught by Lunsford (App. Br. 11-14 and Reply Br. 4-6). In support of this contention, Appellants refer to paragraph 6 of the Declaration which states (App. Br. 11-12; Reply Br. 4 and FF 15):

6. Further, that PVB substrates differ substantially from PVC substrates in their physical and chemical properties. And that, specifically, the adhesion properties of PVC substrates in no way mimic and are not predictive of the adhesion properties of PVB substrates. As noted above, it has been discovered that PVB requires more selective coating chemistries to achieve

acceptable adhesion. In this regard, a person of ordinary skill in the art of coatings would not expect a given carpet coating composition would be interchangeable from a PVC backing to a PVB backing. That independent claim 19 of the pending application recites a carpet product having a PVB backing and a coating composition which includes functional monomer, surfactant, and PVOH colloid; the subject matter of claim 19 is, in his opinion, clearly distinguishable over the *Lunsford* patent which is wholly unrelated to PVB products.

The initial question is, therefore, is the statements at paragraph 6 of the Declaration sufficient to rebut the prima facie case established by the Examiner? On this record, we answer this question in the negative.

As discussed above, Lunsford teaches that its carpet coating compositions are useful for various conventional carpet backing foam materials (FF 9-11). Bell and Anderson also teach, for example, interchangeability of, among other things, conventional PVC and PVB-type foam backing materials in forming conventional carpet products (FF 12-14). There is nothing in paragraph 6 of the Declaration which provides a sufficient factual foundation to doubt the veracity or accuracy of the teachings of Lunsford, Bell, and Anderson (FF 25).

Even if Appellants' self-serving statements at paragraph 6 of the Declaration are accurate, the fact remains that Lunsford's carpet coating compositions are taught to be useful for various conventional foam backing materials, inclusive of a conventional PVB foam backing material (FF 9-11). However different are the adhesive strengths of Lunsford's carpet coating compositions toward different conventional backing materials, the fact remains that Lunsford teaches that they are all sufficient for the purpose of

preparing conventional carpet products (FF 11). Appellants have not demonstrated that Lunsford's carpet coating compositions do not possess sufficient adhesive strengths for, for example, PVB foam backing materials (FF 15 and 16).

Appellants also contend that the claimed subject matter imparts unexpected results (App. Br. 14-16 and Reply Br. 11). In support of this contention, Appellants refer to paragraph 7 of the Declaration (App. Br. 15 and Reply Br. 11). According to the Declaration, Table 1 in paragraph 7 can be found in the Specification (FF 16).

The second question is, therefore, is Table 1 in the Declaration sufficient to show that the claimed subject matter as a whole imparts unexpected results, thereby rebutting the prima facie case of obviousness established by the Examiner? On this record, we answer this question in the negative for the factual findings set forth above (FF 20-24).

Accordingly, based on the totality of record, including due consideration of Appellants' arguments and evidence, we determine that the preponderance of evidence weighs most heavily in favor of obviousness regarding the subject matter recited in claims 13 through 23 and 25 within the meaning of 35 U.S.C. § 103(a).

ORDER

The decision of the Examiner is affirmed.

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TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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