UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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*Ex parte* RICHARD ALLEN HAYES

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Appeal 2006-0990
Application 10/209,369
Technology Center 1700

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Decided: January 5, 2007

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Before CHARLES F. WARREN, THOMAS A. WALTZ, and CATHERINE Q. TIMM, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals the rejection of claims 1-29, the only claims pending in this application. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 134.

INTRODUCTION

Claim 1 is illustrative of the subject matter on appeal:

1. A sulfonated aliphatic-aromatic copolyetherester comprising:

80.0 to 20.0 mole percent of an aromatic dicarboxylic acid residue based on the total moles of dicarboxylic acid residue;

20.0 to 80.0 mole percent of an aliphatic dicarboxylic acid residue based on the total moles of dicarboxylic acid residue;

0.1 to 1.0 mole percent of a sulfonate component residue;

99.9 to 91.0 mole percent of a first glycol residue selected from the group consisting of ethylene glycol residue, 1,3-propanediol residue, and 1,4-butanediol residue based on the total moles of glycol residue;

0.1 to 4.0 mole percent of a poly(alkylene ether) glycol residue based on the total moles of glycol residue;

0 to 5.0 mole percent of a second glycol residue based on the total moles of glycol residue; and

0 to 5.0 mole percent of a polyfunctional branching agent residue.

As evidence of anticipation, the Examiner relies upon the following prior art:

| | | |
|---|---|---|
| Warzelhan | US 6,046,248 | Apr. 04, 2000 |
| Warzelhan | US 5,936,045 | Aug. 10, 1999 |

Claims 1-29 are rejected under 35 U.S.C. § 102(b) as anticipated by either Warzelhan reference.

We reverse for the reasons well stated in the Brief and Reply Brief. We offer the following for emphasis.

## OPINION

*The Anticipation Rejection*

The Examiner rejects the claims on the basis that both Warzelhan references describe a copolyester polyether, each reference having the claimed components of the polymer in amounts encompassed by or overlapping the claimed amounts (Answer 3-5). Appellant acknowledges that the claimed concentration ranges of the various components overlap substantially with the ranges described in the Warzelhan references (Br. 7 and 9). As identified by both the Examiner and the Appellant, the key question here is whether either Warzelhan reference describes what is claimed with "sufficient specificity to constitute an anticipation under the statute." (Answer 6; Br. 4). *See Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 1000, 78 USPQ2d 1417, 1424 (Fed. Cir. 2006).

We have reviewed both references and we agree with Appellant that the Examiner has not established that either reference contains a description of copolyetherester specific enough to anticipate the copolyetherester of the claims. With regard to the relevant components of the copolyetherester, both references have essentially the same disclosure. We will discuss the issues with reference to Warzelhan '045. Appellant provided a table for comparison purposes on page 7 of the Brief. We provide a similar table below including the most detailed description of concentrations within Warzelhan '045. The table below identifies the difference in concentrations between the polymer components of the claims and those of Warzelhan as

disclosed in column 3, lines 8-49. The component column identifies the claimed component and in parentheses, where necessary, the component of Warzelhan meeting the claimed component is identified.

| Component | Claim 1 (mol%) | Warzelhan (mol%) | | |
|---|---|---|---|---|
| | | Broad | Preferred | More Preferred |
| Aromatic dicarboxylic acid (terephthalic acid or ester-forming derivatives) | 80-20 | 80-5 | 70-20 | 60-30 |
| Aliphatic dicarboxylic acid (adipic acid or ester-forming derivatives) | 20-80 | 20-95 | 30-80 | 40-70 |
| Sulfonate [1] | 0.1-10 | 0-5 | 0-3 | 0.1-2 |
| First glycol (dihydroxy with ether functionality - pref. ethylene glycol; 1,4-butanediol) | 99.9-91.0 | 99.8-15 | 99.5-60 | 99.5-70 |
| Poly(alkylene ether) glycol | 0.1-4.0 | 0.2-85 | 0.5-40 | 0.5-30 |

As is clear from the table, the preferred concentrations of the dicarboxylic acids of Warzelhan are fairly similar to those claimed, however, the concentrations of the other components vary appreciably from those claimed. Moreover, further selection of the first glycol (ethylene glycol or 1,4-butanediol) is required from a broader subset of dihydroxy

[1] Mole percentages in claim 1 for the aromatic and aliphatic dicarboxylic acids are based on the total moles of the dicarboxylic acids not including the sulfonate. Warzelhan includes the sulfonates as part of the total moles of dicarboxylic acids. However, the concentration of sulfonate is so low that whether it is calculated based on the total dicarboxylic acids or is calculated based on the total polymer composition, the percentage amount does not significantly change such that it is outside the claimed range. Moreover, Appellant makes no argument with regard to this difference.

compounds. We note that Warzelhan does not expressly disclose a concentration range for ethylene glycol, 1,4-butanediol, and mixtures thereof, the preferred dihydroxy compounds (a21) (Warzelhan, col. 3, ll. 56-65). Viewing the Examiner's rejection in a light most favorable to the Examiner and assuming that the most preferred concentration range described by Warzelhan for the dihydroxy (a21) component describes the concentration for the preferred ethylene glycol, 1,4-butanediol, and mixtures thereof, that concentration is still only somewhat overlapping with the claimed range of the first glycol (ethylene glycol, 1,3-propanediol, and 1,4-butanediol) claimed.

According to the Examiner, "the biodegradable polymer of the present invention flows clearly and naturally from the teachings in the disclosure of the prior art of Warzelhan '045. In view of *Ex parte Lee*, 31 USPQ2d 1105 end points of the range disclosed in the prior art constitute a valid data point and the prior art applied anticipates the claim." (Answer 6-7).

As a first matter, the question is not whether "the biodegradable polymer of the present invention flows clearly and naturally from the teachings in the disclosure of the prior art of Warzelhan '045." The question is whether the prior art describes the claimed subject matter, or something falling within the claim, with sufficient specificity to anticipate the claim. *Atofina*, 441 F.3d at 1000, 78 USPQ2d at 1424.

There is no question that Warzelhan would anticipate if the reference contained a working example of a polymer with the claimed components in concentrations within the claimed ranges. *See Titanium Metals Corp. of Am. v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985)

(Disclosure of a discrete embodiment of an alloy composition with metal concentrations within the claimed ranges anticipated the claim); *In re Gosteli*, 872 F.2d 1008, 1010, 10 U.S.P.Q.2d 1614, 1616 (Fed. Cir. 1989) ("Section 102(e) bars the issuance of a patent if its generic claims are anticipated by prior art disclosing individual chemical species."); *In re Slayter*, 276 F.2d 408, 411, 125 USPQ 345, 347 (C.C.P.A. 1960) ("It is well settled that a generic claim cannot be allowed to an applicant if the prior art discloses a species falling within the claimed genus."). The Examiner, however, makes no finding that Warzelhan describes such a working example. Rather, the Examiner relies upon the broader disclosure in Warzelhan of a polymer having components of concentration encompassing or overlapping the claimed ranges.

There is also no question that if Warzelhan described a copolyetherester containing each of the claimed components in ranges entirely encompassing the claimed ranges and not significantly deviating therefrom there might, under some circumstances, be anticipation. *See Perricone v. Medicis Pharmaceutical Corp.*, 432 F.3d 1368, 1377, 77 USPQ2d 1321, 1327 (Fed. Cir. 2005) (Claimed "effective amount" of ascorbyl palmitate found to be anticipated by prior art describing 0.01-20% based on disclosures in other claims of "up to 10%," "from about 0.025% to about 5%," and "from about 0.025% to about 10%" that evinced the "effective amount"). However, in the present case, even the most preferred ranges of Warzelhan for the glycol components (70-99.5 mol% and 0.5-30 mol%) are broader by a considerable margin than the claimed ranges and do not entirely encompass the claimed ranges (91.0-99.9 mol% and 0.1-4 mol%).

In situations involving virtually little or no need to make selections, a reference may be considered to describe the claimed subject matter within the meaning of 35 U.S.C. § 102. *See In re Schaumann*, 572 F.2d 312, 316-17, 197 USPQ 5, 9 (CCPA 1978) (Reference anticipated because it embraced a very limited number of compounds closely related to one another in structure such that the reference provided a description of those compounds just as surely as if they were identified in the reference by name, one of those compounds being the claimed compound) and *In re Petering*, 301 F.2d 676, 681-82, 133 USPQ 275, 279-80 (CCPA 1962) (While description of a broad class of compounds in the reference did not describe the class of compounds claimed such that the claimed compound was anticipated, the pattern of preferences disclosed in the reference in connection with the generic formula constituted a description of a definite and limited class of compounds such that one of ordinary skill in the art would at once envisage each member of the class). However, where a prior art disclosure is extremely broad, a prima facie case of obviousness under 35 U.S.C. § 103 may not even arise. See *In re Baird*, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994) (Generic diphenol formula disclosed in the reference encompassed more than 100 million diphenols, only one of which was the claimed bisphenol A and there was nothing in the disclosure of the reference suggesting the selection of chemical groups leading to bisphenol A). Between these extremes are prior art disclosures that would have rendered the claimed invention prima facie obvious under 35 U.S.C. § 103. In fact, it is well settled that where the prior art describes the components of a claimed compound or composition in concentrations

within or overlapping the claimed concentrations a prima facie case of obviousness is established. *See In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003)*; In re Geisler*, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

The bottom line is that there is no per se rule for determining patentability under either 35 U.S.C. § 102 or § 103. In every case, one must determine whether something within the claimed invention is either "described" in a way that is sufficiently specific to render it anticipated or whether the differences are such that the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art. The fact that the prior art discloses ranges overlapping, broader, or even within the claimed ranges is not dispositive of either anticipation or obviousness, but it is simply a factor to be considered. To establish anticipation, the Examiner must do more than point to such ranges. *See Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 1000, 78 USPQ2d 1417, 1424 (Fed. Cir. 2006)(broader prior art temperature range of 100-500°C did not describe the narrower claimed range of 330-450°C "with sufficient specificity to anticipate" nor did the overlapping prior art oxygen to methylene chloride molar ratio of 0.001-1.0% describe "with sufficient specificity" the claimed 0.1-5.0 % a molar ratio).

As a second matter, we cannot agree with the Examiner that the end points disclosed by Warzelhan constitute a "valid data point" discrete enough to establish anticipation (Answer 6-7). The ranges, in the context of

Warzelhan, are merely guidelines with regard to workable concentrations for the various classes of components. One of ordinary skill in the art must select a species within the disclosed class and then perform experimentation, albeit routine in nature, to determine the specific amounts to use of the specific species chosen. The end points do not, in this case, reflect a "data point" for something embodying each and every component of the claimed polymer. Put another way, the end points are neither representative of a discrete embodiment nor of specific significance apart from the other values within the range. As stated in *Atofina*, "the disclosure of a range is no more a disclosure of the end points of the range than it is of each of the intermediate points." *Atofina*, 441 F.3d at 1000, 78 USPQ2d at 1424. That holds true in the present case and to the extent that *Ex parte Lee* conflicts with *Atofina*, *Atofina*, being a case decided by our reviewing court, controls.

For the above reasons, we cannot sustain the Examiner's anticipation rejection.

In response to our concurring colleague, we merely note that we have based our decision on the arguments made in the Brief and Reply Brief. We find that those arguments provide an adequate basis upon which to reverse the decision of the Examiner. We do not consider arguments not made in the Brief. 37 C.F.R. § 40.37(c)(1)(vii). Since neither the Examiner nor Appellant argues that mol% of the reactant differs from mol% of the component *residue*, <u>for purposes of this appeal</u> we consider these amounts the same/identical.

Appellant states that the Examiner may have established a prima facie case of obviousness of claim 1 over the Warzelhan references (Br. 6). Appellant, however, submits that there are sufficient facts in the record to

demonstrate conclusively that the melting temperatures of the claimed copolyetheresters are surprisingly and significantly improved relative to those suggested by the Warzelhan references (Br. 6). In other words, Appellant argues that he has provided a showing of unexpected results which overcomes a prima facie case of obviousness. As pointed out by the Examiner, there is no rejection based on obviousness before us (Answer 8). Under the circumstances we will not consider Appellant's showing of unexpected results on this record. While a rejection under 35 U.S.C. § 103(a) can be overcome by a showing of secondary considerations such as unexpected results, a proper rejection under 35 U.S.C. § 102 cannot. *See In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974) ("If the rejection under § 102 is proper, however, appellant cannot overcome it by showing such unexpected results or teaching away in the art, which are relevant only to an obviousness rejection."). We only have a 35 U.S.C. § 102 rejection before us for review in this appeal.

*Remand*

It is not clear on this record whether the Examiner considered obviousness as a basis for rejection. We, therefore, remand the Application to the Examiner for a determination of whether "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains" as required under 35 U.S.C. § 103 and consideration of any secondary indicia of non-obviousness such as unexpected results.

CONCLUSION

In summary, the Examiner rejected claims 1-29 under 35 U.S.C. § 102(b). We reverse the decision of the Examiner, but remand the Application to the Examiner for further consideration of a rejection under 35 U.S.C. § 103.

This Remand to the Examiner pursuant to 37 C.F.R. § 41.50(a)(1) is made for further consideration of a rejection. Accordingly, 37 C.F.R. § 41.50(a)(2) applies if a supplemental examiner's answer is written in response to this Remand by the Board.

REVERSED
and
APPLICATION REMANDED

tf/cam

WARREN, *Administrative Patent Judge*, Concurring:

I concur with the majority that the decision of the Examiner must be reversed and the application remanded for further proceedings with respect to issues raised under 35 U.S.C. § 103(a). I do so for the following reasons.

The dispositive issue in this appeal with respect to § 102(b) is whether as a matter of fact either or both of Warzelhan ‘045 and ‘248 prima facie identically describe to one skilled in this art each and every element of the claimed sulfonated aliphatic-aromatic copolyetherester polymer encompassed by appealed claim 1, either expressly or under the principles of

inherency, in a manner sufficient to have placed a person of ordinary skill in the art in possession thereof. *See, e.g., In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990). Contrary to the position of the majority of this panel (*see above* pp. 3-4 and 9), I am of the view that facts apparent from the record cannot be overlooked in considering whether the Examiner has established a prima facie case of anticipation as a matter of fact.

The plain language of claim 1 specifies a sulfonated aliphatic-aromatic copolyetherester polymer comprising at least (1) the stated mole percent of any aromatic dicarboxylic acid *residue* and of any aliphatic dicarboxylic acid *residue* based only on 100% of the moles of diacid *residue* present in the polymer; (2) the stated mole percent of a *residue* of a member of a Markush group of certain lower alkyl glycols and a poly(alkylene ether)glycol *residue* based only on 100% of the total moles of glycol *residue* present in the polymer; and (3) the stated mole percent of any sulfonate component *residue* based on 100% of the total moles of all residues in the polymer as a whole. In the context of the claim, the term *residue* has its customary meaning in the art of a moiety derived from a particular monomer.

Indeed, the Specification makes clear that "the mole percentages are directed to the relative amounts of the respective diacid residue and gycol [sic, glycol] residue structures present in the final polymeric compound" (Specification 10:22-25; *see also* Br. 2:7-8). However, there is no limitation in claim 1 with respect to the total mole percent of all dicarboxylic acid residues and the total mole percent of all glycol residues in the polymer as a whole, and I find no disclosure in this respect in the Specification. Thus,

claim 1 encompasses *any* mole percent ratio between the diacid residues and the glycol residues based on the total mole percent of all residues in the polymer as a whole, wherein the total mole percent of all the diacid and all the glycol residues in the polymer as a whole ranges from 99 to 99.9 mole percent and the remaining 0.1 to 1.0 mole percent is the specified mole percent of the sulfonate component residue. Indeed, there is no basis in the claim language or the disclosure in the Specification on which to read into claim 1 the limitation that the mole percent of the sulfonate residue is based on the total moles of diacid residues when it is a diacid comonomer, or on the total moles of glycol residues when it is a glycol comonomer (Specification 10:18-22).

In clear contrast, the aliphatic-aromatic copolyetherester polymers of the Warzelhan references are described as the polymerization products of at least two mixtures of *reactants* stated to comprise at least the specified mole percent ranges of aliphatic and aromatic dicarboxylic acid reactants in the diacid first mixture, and, of dihydroxy reactants, among others, $C_{2-6}$ alkanediols and certain poly(alkylene ether)glycols, in the dihydroxy, that is, glycol, second mixture. The optional sulfonated reactant when present is included in the total mole percent of the diacid reactant mixture. *See* Warzelhan '045, e.g., col. 1, ll. 6-44, col. 3, l. 8, to col. 4, l. 13, and col. 6, ll. 17-58[2]; Warzelhan '248, e.g., col. 1, ll. 8-55, col. 3, l. 30, to col. 4, l. 34, col. 9, ll. 4-60, and Warzelhan '248 Example 2.[3]

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[2] The polymer of Warzelhan '045 Example 1 is not prepared with a sulfonated compound.

[3] In Warzelhan '248 Example 2, the sodium sulfophthalate compound is an aromatic dicarboxylic acid monomer. The polymer of Warzelhan '248 Example 1 is not prepared with a sulfonated compound.

The Warzelhan references describe conventional processes of preparing the aliphatic-aromatic copolyetherester polymers as involving a molar ratio of the diacid reactant mixture monomers, including any sulfonated reactants, to dihydroxy reactant mixture in the range from 0.4:1 to 1.5:1. The references further describe the polymer products in terms of molecular weight, other physical properties, which in some instances includes the ratio of carboxylic to hydroxyl end groups. There is *no* description of the polymer products in terms of *residue* moieties. *See* Warzelhan '045, e.g., col. 1, ll. 30-44, col. 2, l. 62, to col., 3, l. 7, and col. 4, l. 49, to col. 7, l. 8; Warzelhan '248, e.g., col. 1, ll. 16-22, and cols. 5-7 and 9.

I find no disclosure in the Warzelhan references which would have taught that the mole percent diacid, sulfonate and dihydroxy reactants in the reaction mixture(s) result in the *identical* mole percent diacid, sulfonate and dihydroxy residue moieties in the polymer product. Indeed, no such correspondence is disclosed by appellants (Specification, e.g., 19:31 to 21:33).

Thus, there is no evidence in the record which supports the Examiner's apparent basic contentions in two respects: (1) that the mole percent monomer reactants in the reaction mixtures taught for the preparation of the generically described sulfonated aliphatic-aromatic copolyetherester polymers in the Warzelhan references result in the same mole percent diacid, sulfonate and glycol residue ranges in the polymer product as generically claimed in appealed claim 1; and (2) that the mole percent relationship between the diacid mixture monomers and the sulfonate compound taught for the preparation of the generically described sulfonated

aliphatic-aromatic copolyetherester polymers in the Warzelhan references results in the same mole percent diacid and sulfonate residue ranges in the polymer product as generically claimed in appealed claim 1. Indeed, the Examiner has not explained how the evidence establishes that, as a matter of fact, the reaction mixtures generically disclosed in the Warzelhan references reasonably appear to one skilled in this art to expressly or inherently result in the identical generic polymer product as the polymer product invention generically specified in appealed claim 1 as I have interpreted this claim above. *Cf. Spada*, 911 F.2d at 708-09, 15 USPQ2d at 1657-58 ("The Board held that the compositions claimed by Spada 'appear to be identical' to those described by Smith. While Spada criticizes the usage of the word 'appear', we think that it was reasonable for the PTO to infer that the polymerization by both Smith and Spada of identical monomers, employing the same or similar polymerization techniques, would produce polymers having the identical composition.").

The issues in this appeal do not involve whether either or both of the Warzelhan references describe a single polymer embodiment falling within appealed claim 1.

Accordingly, I find that the Examiner's duplicative statement of the grounds of rejection (Answer 3-5) has not established even the minimum factual underpinning for a prima facie case of anticipation under the provisions of 35 U.S.C. § 102(b) on this basis alone. *See, e.g., Spada*, 911 F.2d at 708-09, 15 USPQ2d at 1657-58.

Therefore, in the absence of a prima facie case of anticipation, I concur with the majority of this panel that the decision of the Examiner must be reversed.

I further concur with the majority of this panel that this application must be remanded to the Examiner. I am of the opinion that the Examiner must consider whether one of ordinary skill in this art routinely following the teachings of either or both of the Warzelhan references, and indeed, of any other prior art developed by the Examiner, would prima facie reasonably arrive at the identical or substantially identical polymers and other products encompassed by the appealed claims within the meaning of 35 U.S.C. § 103(a). *See, e.g., In re Best*, 562 F.2d 1252, 1255-56, 195 USPQ 430, 433-34 (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. See *In re Ludtke*, [441 F.2d 660, 169 USPQ 563 (CCPA 1971)]. Whether the rejection is based on "inherency" under 35 U.S.C. § 102, on "prima facie obviousness" under 35 U.S.C. § 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." (footnote and citation omitted)); *cf. Spada*, 911 F.2d at 708-09, 15 USPQ2d at 1657-58.

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