THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte SAMEER H. ELDIN, JURG MAURER, ROBERT P. PEYER, PETER GRIESHABER and FRANCOIS RIME

Appeal No. 95-5080
Application 07/952,122[1]

ON BRIEF

Before DOWNEY, SMITH JOHN D. and WALTZ, Administrative Patent Judges.

DOWNEY, Administrative Patent Judge

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 1-4, 6-13 and 15-21, all the claims pending in the application.

[1] Application for patent filed on September 28, 1992. According to the appellants, this application is a continuation-in-part of Application 07/674,637, filed March 25, 1991, abandoned.

The claims are directed to an epoxy resin composition comprising at least one liquid epoxy resin, an anhydride hardener for the resin, a toughener and certain compounds containing two active hydrogen atoms; a cured product and a process for improving the toughness of epoxy resins. Claim 1, the only independent claim, is illustrative of the appealed claims and reads as follows:

1. An epoxy resin composition which comprises

a) at least one epoxy resin containing on average more than one 1,2-epoxy group per molecule, which is liquid and of low viscosity,

b) an anhydride hardener for the epoxy resin a),

c) a toughener, and

d) a hydroxycarboxylic acid, a dicarboxylic acid, a disecondary amine, a primary amine or a biphenol, which is a mononuclear diphenol, dihydroxy naphthaline, dihydroxy biphenyl or another binuclear aromatic compound which has a methylene, isopropylidene, O, SO_2 or S bridge and contains two hydroxyl groups bound to the aromatic nuclei and wherein the benzene rings may also contain halogen atoms.

Appellants indicate that claims 1-4, 6-13 and 15-21 are to viewed as a single set of claims with respect to the issues on appeal (Brief, page 3). Hence, all of the claims stand or fall together. 37 CFR § 1.192(c)(7)(1995). Accordingly, we will limit our consideration to claim 1 in considering the rejection of claims 1-4, 6-13 and 15-21.

The references relied upon by the Examiner are:

Henton et al. (Henton) 4,778,851 Oct. 18, 1988

Lee and Neville (Lee), Handbook of Epoxy Resins, McGraw-Hill Book Company, NY, pp. 12-1 and 12-37 (1967).

The examiner has made the following rejections:

I. The specification stands objected[2] to [sic: claims 1-4, 6-13 and 15-21 stand rejected[3]] under 35 U.S.C. § 112.

II. Claims 1-4, 6-13 and 15-21 stand rejected under 35 U.S.C. § 112, for indefiniteness.

III. Claims 1-4, 6-13 and 15-21 stand rejected under 35 U.S.C. § 103 as unpatentable over Henton in view of Lee.

We reverse rejections I-III and institute a new ground of rejection.

I. Claims 1-4, 6-13 and 15-21 stand rejected under 35 U.S.C.

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[2] Objections are not reviewable by the Board. See MPEP 706.01.

[3] Appellants, in their brief (pages 3-4) addressed this matter as a rejection of the claims 1-4, 6-13 and 15-21 under 35 U.S.C. § 112, first paragraph and the examiner in his supplemental answer refer to the matter as a 35 U.S.C. § 112, first paragraph rejection. Accordingly, we treat the examiner's statement in the final rejection and in the examiner's answer as a rejection of claims 1-4, 6-13 and 15-21 under 35 U.S.C. § 112, first paragraph.

§ 112 as failing to provide an adequate written description of the invention. We reverse this rejection.

The specification at page 6 identifies examples of graft polymers as methacrylate/butadiene/styrene, acrylate/methacrylate/butadiene/styrene or acrylonitrile/butadiene/styrene polymers.

The examiner takes the position that one of ordinary skill in the art cannot prepare, from this noted disclosure, graft polymers in the absence of an identification of the polymer backbone and the monomers grafted thereon. We cannot agree with the examiner's position.

The last named polymer, acrylonitrile/butadiene/styrene is better known as an ABS resin. An ABS resin[4] by definition is a true graft polymer consisting of an elastomeric polybutadiene or rubber phase, grafted with styrene and acrylonitrile monomers for compatibility, dispersed in a rigid styrene-acrylonitrile (SAN) matrix. The other named examples also include butadiene and styrene in combination with an acryl monomer. In our view, one of ordinary skill in this art would clearly know that the

[4] See The Condensed Chemical Dictionary, Ninth Ed., page 2, 1977 (copy enclosed).

butadiene in each exemplary polymer comprises the polymer backbone, with the acryl and styrene monomers grafted thereon.

See also U.S. Patent No. 3,496,250 in appellants' specification (page 6, line 18).

II. Claims 1-4, 6-13 and 15-21 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite.[5] We reverse this rejection.

The examiner complains that the metes and bounds of the viscosity of the epoxy resin is unclear since the parameters of the term a "low" viscosity cannot be ascertained.

The term "low" is a relative term. However, relative terms are not per se indefinite. It must be determined whether the specification provides a standard for measuring the degree. Seattle Box Company, Inc. V. Industrial Crating & Packing, Inc., 731 F.2d 818, 826, 221 USPQ 568, 574 (Fed. Cir. 1984); and In re Marosi, 710 F.2d 799, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Here, the specification at page 4, last two lines, indicates that the viscosity of liquid and low viscosity epoxy resins at 25°C does not exceed a value of 20,000mPa@s. We find the standard given in the specification to be sufficient.

[5] The examiner also rejected these claims with respect to the term "naphthaline". This rejection was dropped by the examiner. See Supplemental Examiner's Answer (page 2).

III. Claims 1-4, 6-13 and 15-21 stand rejected under 35 U.S.C. § § 103 as being unpatentable over Henton in view of Lee.

The examiner points to Henton as showing a composition comprising a liquid bisphenol A epoxy resin pre-reacted with bisphenol A (col. 3, lines 2-3), a core/shell polymer (col. 6, lines 29-31), a hardener (col. 6, lines 41-43) and fillers (col. 2, line 53). The examiner indicates that Henton does not show the claimed anhydride hardener and he relies upon Lee to show alicyclic carboxylic anhydrides with amine accelerators such as benzyldimethyl amine (Table 12-6) as a hardening system for epoxy resins. The examiner has reasoned that one of ordinary skill in the art would have found it obvious to harden the Henton epoxy resins with the hardeners of Lee since Henton himself acknowledges the use of such hardeners from Lee in order to attain the proper balance of high temperature hardening without undue weight loss.

In making this rejection, the examiner has taken the position that components a) and d) of the instant claim are satisfied by the preadvanced diglycidyl ether because the claims

are open to blending and/or reaction of the components in any sequence, such as the pre-reaction of components a and d. The applicant urges that the prereacted epoxy resin cannot satisfy a mixture of a) and d) of the instant claims because a chemical reaction generally alters the character and properties of the involved species and the wording of the instant claims requires the presence of four individual components and does not encompass reaction products which may be obtained by a specific reaction of two or more compounds.

After careful consideration of the arguments of the examiner and appellants as well as the evidence relied upon by both, we find ourselves in agreement with the appellants that the instant claims recite a blend of four ingredients and that the prereacted epoxy resin cannot satisfy both a) and d) as the examiner has alleged.

We cannot agree with the examiner's reasoning with respect to the rejection of record and we reverse this rejection. However, we are of the view that the teachings of Henton and Lee would have rendered the instant claims prima facie obvious. Our reasons follow.

There is no dispute that Henton teaches a liquid epoxy resin (column 2, line 60 - column 3, line 52) in combination with

a core-shell polymer (toughener) (column 3, line 53 - column 5, line 10) and a hardener (column 5, lines 11, 58-61, column 6, lines 41-50 and claim 13). Henton indicates that the hardeners can be selected from Lee. Lee discloses numerous anhydride hardeners in combination with amine accelerators useful for curing epoxy resins. Henton also indicates that within the expression "epoxy resin continuous phase" are curing agents, hardening agents, reactive and inert diluents, and initiators or catalysts. Henton's catalyst includes amines, e.g. methylene dianiline and triethylene tetramine. Hence, from the teachings of Henton one of ordinary skill in this art would combine a liquid epoxy resin, a toughener, an anhydride and amine accelerator, and an amine catalyst which catalyst satisfies the claimed amine component (d). Hence, the teachings of Henton and Lee would have been be sufficient to render the instant claims prima facie obvious within the meaning of 35 U.S.C. § 103.

Appellants have relied upon the Eldin declaration to establish unobviousness. We, like the examiner, have reviewed the evidence of nonobviousness and weighed the same against the evidence of obviousness of record. In re Johnson, 747 F.2d

1456, 1460, 223 USPQ 1260, 1263 (Fed.Cir. 1984); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

However, this evidence of nonobviousness in our view is

inconclusive to establish that the claimed epoxy resin exhibits a difference, that the difference actually obtained is unexpected and of a practical advantage. In re Freeman 474 F.2d 1318, 1324, 177 USPQ 139, 143 (CCPA 1973), citing In re Klosak, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972). See also In re D'Ancicco, 439 F.2d 1244, 1248, 169 USPQ 303, 306 (CCPA 1971).

Eldin's test composition B which is allegedly based upon Henton, employs an epoxy resin, toughener and amine curing agent but does not include a hardener, as disclosed and claimed by Henton. Test composition A based upon the instant claims, employs an epoxy resin, a toughener, a hardener-amine accelerator combination and bisphenol A. Eldin concludes that the results show the unexpected superiority of the claimed composition over those of Henton with respect to fracture toughness--the products according to the invention are said to exhibit an improvement of about 70% over those of Henton.

As noted, composition A includes components b and d whereas test composition B contains neither. Hence, the two tested compositions differ by more than the addition of the component having two active hydrogen atoms. Since Henton discloses and claims the addition of a hardener, and the hardener is not part of test composition B, the comparison is not truly

comparative and one cannot conclude that the difference in results is attributable to the addition of bisphenol A and not to the absence of the hardener.

The showing must be commensurate with the scope of the claims. Here, the singular example does not provide an adequate basis to conclude that the broad range of active hydrogen compounds claimed would behave in the same manner. This is important, especially where as here, the prior art suggests the use of amines in these systems which fall within the scope of the instant claims.

Lastly, appellants rely on fracture toughness of the cured product. However, they fail to explain what it is, how it is measured, what the desired values should be or what is significant about fracture toughness of the obtained value, etc. In this regard, the patent applicant or declarant has the burden of showing unexpected results, In re Klosak, supra, and the additional burden of explaining the evidence of nonobviousness proffered. In re Borkowski, 505 F.2d 713, 719, 184 USPQ 29, 33 (CCPA 1974). Hence, the burden is upon appellants to explain the precise meaning and significance of the test data obtained, and why the difference in results are in fact unexpected, unobvious and of both statistical and practical significance. We find the

comparison to lack sufficient probative value to overcome the rejection of record.

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b)(amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63,122 (Oc. 21, 1997)). 37 CFR § 1.196(b) provides that, "A new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (§ 1.197(c)) as to the rejected claims:

> (1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner....
>
> (2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record....

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

AFFIRMED; 37 CFR § 1.196(b)

MARY F. DOWNEY Administrative Patent Judge	)
	) BOARD OF PATENT
JOHN D. SMITH Administrative Patent Judge	) APPEALS AND
	) INTERFERENCES
THOMAS A. WALTZ Administrative Patent Judge	)

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