

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte SEBASTIAAN B. DAMMAN and GERRIT DE WIT

Appeal 2006-2680
Application 10/710,187
Technology Center 1700

ON BRIEF

Before MILLS, GRIMES, and GREEN, *Administrative Patent Judges*.

GRIMES, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal involves claims to thermoplastic molding compositions. The examiner has rejected the claims as anticipated and obvious. We have jurisdiction under 35 U.S.C. § 134. We reverse.

BACKGROUND

“Plastic containers, particularly those useful for the containment of liquids, can be made from a variety of thermoplastic polymers, although individual thermoplastic polymers have certain drawbacks.” (Specification [0003].) For example, polyetherimides and polycarbonates “are not practical for applications requiring low oxygen permeability.” (*Id.*) “Polyester resins

have also been used as plastic containers for liquids, but frequently exhibit undesirably high levels of creep, resulting in permanent deformation.” (*Id.*)

While mixtures of these polymers are known in the art, “manufacture and molding of such blends can be difficult, especially when a large proportion of polyester is used. There accordingly remains a need in the art for improved thermoplastic resin compositions and efficient methods for the manufacture of such compositions.” (*Id.* at [0004].)

DISCUSSION

1. CLAIMS

Claims 1-4 and 8-12 are on appeal.

The examiner has objected to claims 5 and 6 as being dependent upon a rejected base claim, but has indicated that they would be allowable if rewritten in independent form including all of the limitations of the base claim. (Final Rejection 4, March 4, 2005.)

Claim 7 is not included in any ground of rejection. In the “Status of Claims” section of the Appeal Brief, Appellants state that claim 7 “presumably [] is also allowable since it depends from claim 5.” (Br. 1.) The Examiner stated that “[t]he statement of the status of the claims contained in the brief is correct.” (Answer 2.)

Appellants have not argued the claims separately. Therefore, the claims subject to each rejection stand or fall together. 37 CFR § 41.37(c)(1)(vii). Claims 1 and 4 are representative and read as follows:

1. A thermoplastic molding composition comprising:
50 to 90 wt.% of a polyester;
8 to 48 wt.% of a polyetherimide; and
2 to 25 wt.% of a high rubber graft impact modifier comprising at least 40 wt.% rubber, the amount of the polyester, polyetherimide, and impact

modifier being based on the total combined weight of the thermoplastic molding composition.

4. The composition of Claim 1, wherein the polyester comprises polyethylene terephthalate.

2. ANTICIPATION BY LIU ‘380

Claims 1-3 and 8-12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Liu ‘380.¹ The Examiner reasons: “Run 6 in Table 1 column 16 discloses a composition containing applicants' components in applicants' amount having a component ‘PEE’ as in applicants' polyetherimide; KM 653/315 graft copolymer as in applicants' impact modifier and polybutylene terephthalate polyester (Valox 315).” (Office action mailed October 13, 2004, 2-3; cited in Answer 4.)

Appellants argue that the compositions disclosed in Liu ‘380 contain “what the patentees . . . have named as a polyetherimide ester (PEIE),” a product which is not encompassed by the term “polyetherimide” in claim 1. (Br. 3.)

Appellants argue that “[t]he term polyetherimide (PEI) has a recognized meaning in the art, which is the meaning given in the present application.” (*Id.*) Appellants point out that volume 12 of the *Encyclopedia of Polymer Science and Engineering* (1988), at pages 371 and 372 (Table 5), explains that “polymers derived from condensation of diamines and dianhydrides, which have imide containing groups disposed between successive aromatic ether bonds are called polyetherimides.” (Br. 3.) Appellants urge that this definition is consistent with both structure II in

¹ Liu, U.S. Patent 4,814,380, issued March 21, 1989.

paragraph [0018] of the Specification, and White² (col. 1, line 10, through col. 3, line 8). (Br. 3.)

Thus, Appellants argue that, under the art-recognized definition, polyetherimides all have aromatic ethers, whereas the polyetherimide esters of Liu ‘380 lack aromatic ethers, having instead aromatic esters. (Br. 3-4.) Appellants argue that Liu ‘380 does not use the term “polyetherimide as that term would be used in the art. Simply because the prior patentees use a name that is to some extent misdescriptive cannot serve to convert the actual chemical compounds described therein into something that they are not.” (Br. 4.)

The Examiner responds that claim 1 encompasses the polyetherimide esters of Liu ‘380 because “the Liu patents disclose materials (referred to by Liu as a ‘polyetherimide ester’) containing at least imide and ether repeat units.” (Answer 4.) The Examiner further urges that neither the *Encyclopedia of Polymer Science*, nor White, nor Appellants’ specification, provides “anything purporting to be a definition of ‘polyetherimide.’” (Answer 5.)

“[T]he examiner bears the initial burden . . . of presenting a *prima facie* case of unpatentability. . . . After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument.” *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

² White et al., U.S. Patent 4,141,927, issued February 27, 1979.

We agree with Appellants that the Examiner has not established that the term “polyetherimide” in claim 1 encompasses the polyetherimide esters described in Liu ‘380. “Although the PTO must give claims their broadest reasonable interpretation, this interpretation must be consistent with the one that those skilled in the art would reach.” *In re Cortright*, 165 F.3d 1353, 1358, 49 USPQ2d 1464, 1467 (Fed. Cir. 1999).

The portion the *Encyclopedia of Polymer Science and Engineering* cited by Appellants reads as follows (citations omitted, emphasis added):

The chemistry used in the condensation of bisphenols with dinitrobisimides involves a nucleophilic aromatic substitution reaction in which *the polymer chain is generated by the formation of successive aromatic ether bonds*. This mechanism is significantly different from that of the condensation of diamines with dianhydrides, and *the polymers derived by this route are known as polyetherimides*.

(12 *Encyclopedia of Polymer Science and Engineering* 371.)

Also, as argued by Appellants, the polymers displayed in Table 5 on page 372 of the *Encyclopedia of Polymer Science and Engineering* all contain successive aromatic ether moieties. Thus, Appellants have presented evidence to show that those skilled in the art considered polyetherimides to be compounds containing aromatic ether linkages.

After Appellants presented evidence rebutting the *prima facie* case of anticipation, the burden shifted back to the Examiner to establish that his construction of “polyetherimide” was consistent with that used by those of skill in the art. Cf. *In re Sasse*, 629 F.2d 675, 681, 207 USPQ 107, 111-112 (CCPA 1980) (burden shifted back to PTO after appellants presented evidence that alleged anticipatory reference was not enabling).

In this case the Examiner essentially urges that, based on its plain meaning, the term “polyetherimide” encompasses any polymer containing a plurality of ether moieties and a plurality of imide moieties. (Answer 4.) However, the Examiner has not provided any evidence to show that one skilled in the art would interpret the term “polyetherimide” in that manner.

In contrast, the *Encyclopedia of Polymer Science* provides evidence that one skilled in the art would interpret the term “polyetherimide” to mean those polymers containing successive aromatic ether bonds made from a condensation reaction of bisphenols and dinitrobisimides. In reviewing Liu ‘380 and the other references of record, we see nothing suggesting that one skilled in the art would consider the meaning of “polyetherimide” supplied in the *Encyclopedia of Polymer Science* to be incorrect or overly narrow.

Therefore, a preponderance of the evidence does not support the Examiner’s position that the term “polyetherimide” in claim 1 encompasses any polymer that contains a plurality of ether moieties and a plurality of imide moieties. Rather, the weight of the evidence shows that one skilled in the art would have interpreted the term “polyetherimide” to encompass polymers containing successive aromatic ether bonds made from a condensation reaction of bisphenols and dinitrobisimides.

None of the disclosed polyetherimide esters disclosed by Liu ‘380 is a condensation product of bisphenols and dinitrobisimides, nor do any of Liu ‘380’s polyetherimide esters contain successive aromatic ether moieties. Rather, Liu ‘380’s polyetherimide esters are

- the reaction products of:
(i) at least one diol;
(ii) at least one dicarboxylic acid or its ester forming

- reactive derivative; and
- (iii) a set of reactants selected from
- (a) (1) at least one high molecular weight poly(oxyalkylene)diamine, and (2) at least one tricarboxylic acid or its derivative, or
- (b) at least one high molecular weight polyoxyalkylene diimide diacid.

(Liu '380, col. 2, ll. 28-38.)

Also, instead of having aromatic ether bonds disposed between the imide subunits, the individual structural units of the polymers are linked by ester bonds. (*Id.*, col. 8, ll. 27-38 (formulae IV and V).) The ether bonds, rather than linking aromatic moieties, are present in the group designated as "G," which is "the radical remaining after the removal of the amino groups of a long chain alkylene ether diamine." (*Id.*, col. 4, ll. 46-48.)

Thus, the "polyetherimide esters" of Liu '380 are not made from the same components as "polyetherimides," as understood by one skilled in the art. Liu '380's polyetherimide esters also lack the successive aromatic ether moieties one skilled in the art would understand a "polyetherimide" to contain.

Therefore, because the compositions described by Liu '380 do not contain "polyetherimides," as one of skill would interpret that term, we reverse the anticipation rejection of claims 1-3 and 8-12 over Liu '380.

3. ANTICIPATION BY LIU '765

Claims 1-3 and 8-12 also stand rejected under 35 U.S.C. § 102(b) as being anticipated by Liu '765.³ The Examiner reasons: "Run 7 in column

³ Liu, U.S. Patent 4,659,765, issued April 21, 1987.

18 discloses a composition embraced by that of applicants containing polybutylene terephthalate as well as KM concentrate which contains PBT as well as applicants[‘] impact modifier and components PEIE as in applicants’ polyetherimide.” (Answer 4.)

We reverse this rejection as well.

As discussed *supra*, a preponderance of the evidence demonstrates that one skilled in the art would interpret a “polyetherimide” to be a polymer containing successive aromatic ether bonds made from a condensation reaction of bisphenols and dinitrobisimides.

In contrast, the compounds used in Run 7 referenced in the rejection are “polyetherimide esters prepared from butanediol, dimethylterephthalate, poly(propylene ether) diamine (number average MW 2000) and trimellitic anhydride . . .” (Liu ‘765, col. 17, ll. 29-32.) Thus, the polyetherimide esters of Liu ‘765 are not prepared from a condensation reaction of bisphenols and dinitrobisimides, as one skilled in the art would understand “polyetherimides” to be.

Also, based on the starting materials used, the ether bonds in the polyetherimide esters of Liu ‘765 are present in the polymer’s long chain alkylene ether moiety, rather than in a chain of successive aromatic ether bonds, as one of skill would understand to be present in a “polyetherimide.”

The Examiner does not point to, and we do not see, any other disclosure in the reference of a composition containing “polyetherimides,” as one skilled in the art would interpret that term. We therefore reverse the anticipation rejection of claims 1-3 and 8-12 over Liu ‘765.

3. OBVIOUSNESS

Claim 4 stands rejected as being obvious over either Liu ‘380 or Liu ‘765. (Answer 4.) Claim 4 depends from claim 1 and adds the limitation that “the polyester comprises polyethylene terephthalate.”

We reverse this rejection as well. As discussed *supra*, neither Liu ‘380 nor Liu ‘765 discloses a composition comprising a “polyetherimide,” as one of skill would interpret that term. The examiner has not pointed to any teaching in the references that would suggest such a composition. We therefore reverse the obviousness rejection of claim 4.

SUMMARY

Because a preponderance of the evidence shows that one skilled in the art would not have interpreted the term “polyetherimide” to encompass the polyetherimide esters in the compositions of Liu ‘380 and ‘765, we reverse the anticipation rejections of claims 1-3 and 8-12. Because the Liu patents do not teach or suggest the use of a “polyetherimide,” as one skilled in the art would interpret that term, in the composition recited in claim 4, we reverse the obviousness rejection of that claim.

REVERSED

DEMETRA J. MILLS)
Administrative Patent Judge)
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