

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 DOULAS E. FJARE

Appeal 2007-1559
Application 10/151,746
Technology Center 1700

Decided: May 23, 2007

Before EDWARD C. KIMLIN, CHUNG K. PAK, and JEFFREY T. SMITH, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 12-15 and 27-36.

Claim 12 is illustrative:

12. A fiber reinforced composite comprising from about 35 to about 60 volume percent carbon fibers, based upon the total volume of the composite, imbedded in the resin reaction product of a mixture comprising:

from about 30 to about 50 parts by weight of ethylenically unsaturated liquid monomer;

from about 70 to about 50 parts by weight of an unsaturated polyester having a reactive hydroxyl group content represented by a hydroxyl number of from about 30 to about 120 mg KOH/g or resin; and

an amount of an organic polyisocyanate sufficient to provide from about 0.05 to about 0.65 moles of isocyanate groups per mole of said reactive hydroxyl groups.

The Examiner relies upon the following references as evidence obviousness:

Butler	US 5,998,510	Dec. 7, 1999
Yamada	JP 56-55247	May 15, 1981

Appellant's claimed invention is directed to a carbon fiber reinforced composite comprising an ethylenically unsaturated liquid monomer, an unsaturated polyester having reactive hydroxyl groups, and an amount of organic polyisocyanate sufficient to provide a molar ratio of isocyanate groups to hydroxyl groups of from about 0.05 to about 0.65.

Appealed claims 12-20 and 27-36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Butler in view of JP '247.¹

Appellant's principal Brief fails to provide separate arguments for any particular claim on appeal. Accordingly, all the appealed claims stand or fall together with claim 12. Although Appellant presents separate arguments in the Reply Brief, it is fundamental that arguments not raised in the main Brief are considered waived. *See Cross Med. Prods., Inc. v. Medtronics Sofamor*

¹ The Examiner's statement of the rejection at page 3 of the Answer referencing only claim 12-20 is inadvertent, harmless error. Appellant's principal Brief acknowledges the § 103 rejection of claims 27-36 as well (see page 3 of principal Brief).

Danek, Inc., 424 F.3d 1293, 1320-21 n.3, 76 USPQ2d 1662, 1683 n.3 (Fed. Cir. 2005).

We have thoroughly reviewed each of Appellant's arguments for patentability. However, we are in complete agreement with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejection for essentially those reasons expressed in the Answer, and we add the following primarily for emphasis.

There is no dispute that Butler discloses a fiber reinforced composite comprising an ethylenically unsaturated liquid monomer, an unsaturated polyester having an amount of reactive hydroxyl groups within the claimed range, and an amount of organic polyisocyanate sufficient to provide a molar ratio of isocyanate group to hydroxyl group within the claimed range. Butler teaches that the polymerizable composition can have fibrous reinforcing materials added thereto, but a list of examples of the fibrous materials does not include the claimed carbon fibers (*see col. 7, ll. 29 et seq.*). However, as explained by the Examiner, JP '247 teaches that compositions comprising unsaturated polyester resins of the type presently claimed and disclosed by Butler can be reinforced with carbon fibers by adding to the composition a polyisocyanate compound as a thickener in a molar ratio of 0.7 to 1.3 with respect to the reactive hydroxyl group. Hence, since the fiber reinforced composition of Butler may comprise a molar ratio of isocyanate to hydroxyl groups taught by JP '247, we agree with the Examiner that it would have been obvious to one of ordinary skill in the art to incorporate carbon fibers

in polymeric compositions embraced by the Butler disclosure. We agree with the Examiner that one of ordinary skill in the art would have found it obvious, based on the collective teachings of Butler and JP '247, to formulate a composition comprising the claimed components wherein the molar ratio of isocyanate-hydroxyl groups is optimally within the range of 0.7 to 1.3. We also agree with the Examiner that one of ordinary skill in the art would have understood that a carbon fiber reinforced composition can also be achieved by using molar ratios of isocyanate/hydroxyl groups outside the optimal range disclosed by JP '247 without achieving all the benefits taught by JP'247.

Appellant maintains that the claimed molar ratio of isocyanate/hydroxyl groups of "about 0.05 to about 0.65" is not taught by JP '247. We disagree. As correctly pointed out by the Examiner, it has long been held that the claim term "about" permits some tolerance with respect to the recited value. *In re DeVaney*, 185 F.2d 679, 683, 88 USPQ 97, 101 (CCPA 1950); *In re Ayers*, 154 F.2d 182, 185, 69 USPQ 109, 112 (CCPA 1946); *In re Perkins*, 346 F.2d 981, 984, 146 USPQ 63, 65 (CCPA 1965). Consequently, we agree with the Examiner that there is no patentable distinction between the claimed molar ratio of "about 0.65" and the ratio of 0.7 disclosed by JP '247. Also, we find that Appellant's Specification attaches no criticality to the claimed range for the molar ratio. To wit, the Specification discloses that the amount of diisocyanate is contingent upon the reactive hydroxyl content of the unsaturated polyester component, and that "[g]enerally, the composition will comprise from about 5 to about 65 mole percent, preferably from about 35 to about 50 mole percent, of the

amount of diisocyanate needed to react with all of the reactive hydroxyl groups in the polyester" (page 7, ll. 6-10). While Appellant contends in the Reply Brief that "unexpected results are obtained when lower ratios of isocyanate to hydroxyl are used" (page 6, last para.), Appellant fails to point to any specific evidence of unexpected results, let alone provide the requisite analysis of any such results. It is well-settled that the burden of demonstrating unexpected results rests on the party asserting them and, manifestly, it is not within the province of this Board to ferret out such evidence that may be in the record. *In re Merck & Co.*, 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986); *In re Klosak*, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972).

Appellant asserts in the Reply Brief that "[t]he Examiner's assertion that the hydroxyl groups to isocyanate groups range of from 0.7 to 1.3 taught by JP '247 overlaps with the Appellant's claimed hydroxyl groups to isocyanate groups range of from 0.05 to about 0.65 for the first time in the Examiner's Answer amounts to a new ground of rejection" (page 3, para. 3). However, this argument is not availing to Appellant. First, the proper recourse for an applicant perceiving a new ground of rejection is a petition to the Director. Secondly, it is our view that the Examiner's Answer does not constitute a new ground of rejection. The Examiner's articulation of a long-held principal of patent jurisprudence pertaining to the term "about" is simply responsive to Appellant's arguments. Also, Appellant has not been denied due process on this issue since the Reply Brief presents an argument on this point. Specifically, Appellant argues that "[b]ecause of the unpredictability of the chemistry involved in the present application, the

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disclosure of JP '247 reciting a ratio of 0.7 simply cannot anticipate or render obvious the ratio of 'about 0.65' required in the Appellant's claims" (page 4, Reply Br., third para.). However, we find no merit in this argument because the unpredictability of chemistry has no bearing on the issue of whether the claim term "about 0.65" encompasses the value of 0.7.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(iv)(2006).

AFFIRMED

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