

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WOLFGANG KAUFHOLD,
HENRICU PEERLINGS,
HANS-GEORG HOPPE,
and WOLFGANG ROHRIG

Appeal 2008-4885
Application 10/095,154
Technology Center 1700

Decided: September 29, 2008

Before THOMAS A. WALTZ, PETER F. KRATZ, and
CATHERINE Q. TIMM, *Administrative Patent Judges*.

KRATZ, *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, 8 and 9. We have jurisdiction pursuant to 35 U.S.C. § 6.

This is a second appeal involving the subject matter of this Application. In the earlier appeal (Appeal No. 2006-0324), a Decision was rendered by a panel of this Board (mail date Jan. 31, 2006) affirming the Examiner's § 103(a) rejection of an earlier and somewhat broader set of claims than the same numbered claims now being appealed. The presently maintained § 103(a) rejection of the Examiner is based on identical prior art as was before the Board in the prior appeal.

Appellants' claimed invention is directed to a thermoplastic polyurethane (TPU) molding composition comprising polyurethane and a molded article prepared therefrom. The polyurethane has a Shore A hardness within a specified value range and a specified NCO index. Also, the polyurethane used in the claimed composition is polyurethane that can be prepared by reacting, optionally among other things, the following reactants:

(1) an aliphatic polyisocyanate component including hexamethylene diisocyanate (HDI);

(2) a polyol component comprising polyol having specified number average molecular weight and further compositional constraints together with the proviso of a specified equivalent ratio of the NCO groups of reactant (1) to the OH groups of reactant (2); and

(3) a chain extender that includes a specified amount of 1,6-hexanediol.

Claim 1 is illustrative and reproduced below:

Claim 1. A thermoplastic molding composition comprising a soft polyurethane having a Shore A hardness of 70 to 90, and prepared by reacting, optionally in the presence of (D) a catalyst ,

A) an aliphatic polyisocyanate component comprising

A1) hexamethylene diisocyanate (HDI),

B) a polyol component comprising

B1) 100 to 70 wt.%, based on 100 wt.% of B), of at least one polyol having a number-average molecular weight of 3,500 to less than 4300 g/mol, selected from the group consisting of polyoxypropylene glycol, polyoxyethylene glycol and copolyoxyalkylene diols comprising polyoxypropylene-polyoxyethylene units, and

B2) 0 to 30 wt.%, based on 100 wt.% of B), of a different polyol from B1) having a number-average molecular weight of 600 to 10,000 g/mol, and

C) a mixture of chain extenders comprising:

C1) 80 to 100 wt.%, based on 100 wt.% of C), of 1,6-hexanediol, and

C2) 0 to 20 wt.%, based on 100 wt.% of C), of a chain extender having a number-average molecular weight of 60 to 500 g/mol, and which is different than C1),

wherein the equivalent ratio of NCO groups in A) to OH groups in B) is 1.5:1.0 to 30.0:1.0, and said polyurethane has an NCO index of 95 to 105.

The Examiner relies on the following prior art references as evidence in rejecting the appealed claims:

Smith	5,096,993	Mar. 17, 1992
Kaufhold (as translated ¹)	DE 199 40 014 A1	Jun. 21, 2000

Claims 1, 8, and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaufhold in view of Smith.

¹ Our references to Kaufhold herein are to the English language document furnished as a translation by Appellants on August 05, 2002.

We affirm the stated rejection for substantially the reasons well stated by the Examiner in the Examiner's Answer and as further explained below.

Appellants argue all of the rejected claims together as a group. Accordingly, we select claim 1 as the representative claim on which we shall decide this appeal.

We have considered all of the arguments set forth in the Appeal Brief and Reply Brief.² Appellants advance arguments that evince a preference for having the obviousness patentability question as to their claimed invention considered and resolved *vis-à-vis* the applied prior art on the basis of: (1) our acceptance of Appellants' identification of several asserted Examples from the applied references, a few comparative Examples from Appellants' Specification, and an additional comparative test presented by Dr. Peerlings in a Declaration under 37 C.F.R. § 1.132 as representative of the prior art; (2) our acceptance of several working Examples from the subject Specification as being representative of the claimed subject matter; and (3) our acceptance of a premise that comparing the latter sets of Examples with each other in a limited manner with respect to identified test results completes the obviousness inquiry (App. Br. 5-9; Reply Br. 2-4). Apparently from Appellants' perspective, this comparison should fully inform us as to the appropriate obviousness question presented in this appeal and, as argued, would allegedly lead us to a resolution of this inquiry in favor of Appellants' position in opposition to the Examiner's rejection. *Id.*

² Arguments not made in the Briefs are considered to be waived. *See* 37 C.F.R. § 41.37(c)(vii) (2006).

We decline this invitation to approach the obviousness question raised by this appeal in such a fashion. Rather, we employ a methodology in accordance with the mandate set forth in 35 U.S.C. § 103 and as further informed by the principles of law developed case by case over the years since the 1952 effective date of the original version of this statute. A few pertinent excerpts from this case law follow.

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) any secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). “[A]nalysis [of whether the subject matter of a claim is 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. Teleflex, Inc.*, 127 S. Ct. 1727, 1741 (2007). *See 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.”).

It is not disputed that Kaufhold discloses a TPU molding composition that includes polyurethane having an NCO index of 95 to 105, an NCO index like Appellants’ claimed molding composition requires (Kaufhold 3). In addition, Kaufhold’s compositions are said to employ polyurethane having either a Shore A hardness of between 75 to 84 and a softening

temperature greater than 100°C, or having a Shore A hardness of between 85 to 98 and a softening temperature greater than 130°C (Kaufhold 2). Thus, there is extensive overlap of the hardness characteristic of the polyurethane of Kaufhold's composition and the polyurethane of the composition required by Appellants' representative claim 1.

Like Appellants, Kaufhold discloses that their TPU composition includes polyurethane that can be made by reacting: (1) diisocyanate, such as HDI, (2) polyol, and (3) a chain lengthener (extender) (Kaufhold 3). Kaufhold discloses that the equivalent ratio of diisocyanate to polyol is between 1.5:1.0 and 10.0:1.0, which disclosed equivalent ratio range is encompassed by the claim 1 equivalent ratio range. Kaufhold teaches that the polyol component for making the polyurethane can be selected to be a "a polyether polyol having a number average molecular weight of between 600 to 5,000 g/mol, preferably between 700 and 4,200 g/mol." (Kaufhold 4). This disclosed number average molecular weight range of Kaufhold overlaps the claim 1 number average molecular weight range of 3,500 to less than 4,300 g/mol. for the main polyol component used in making a polyurethane component of the representative claim 1 molding composition.

Like Appellants' polyol, Kaufhold teaches that a polyether polyol can optionally be selected for use in making a molding composition polyurethane with the polyether polyol made such that ethylene oxide and propylene oxide reaction products are included therein, as correctly determined by the Examiner (*Compare* Kaufhold 8 with Specification 6; Ans. 3). Moreover, the polyol component of Kaufhold can include "a mixture of polyether polyol and polyester polyol" (Kaufhold 6-7). In

addition and like Appellants' claim 1 chain extender, the preferred chain extender of Kaufhold is 1,6-hexanediol (Kaufhold 10).

Given the above teachings of Kaufhold, much less taken together with the additional teachings of Smith as further explained and applied by the Examiner in the Answer, we determine that it would have been prima facie obvious to one of ordinary skill in the art to utilize polyether polyol having the claimed characteristics as the primary polyol component in Kaufhold simply by following the teachings of Kaufhold with or without Smith for making a polyurethane component of a molding composition that corresponds to the representative claim 1 requirements for the reasons stated above and in the Answer (Ans. 3-4; Smith, col. 3, l. 26 –col. 4, l. 10, and Table 1 (Polyol A and B)).³ In this regard, we note that Appellants do not argue that polyol of the type encompassed by the claim 1 requirements was not encompassed by the polyol disclosed as being useful by Kaufhold in making a polyurethane component of a molding composition, as discussed above.

Finally and against this backdrop, we turn to Appellants' arguments respecting the Examples and Comparative Examples in the Specification and Dr. Peerlings' Declaration and the referenced examples of the applied references. At the outset, we note that the referenced Comparative examples

³ “The person of ordinary skill in the art is a hypothetical person who is presumed to be aware of all the pertinent prior art. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986). See *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (“[T]he absence of specific findings on the level of skill in the art does not give rise to reversible error ‘where the prior art itself reflects an appropriate level and a need for testimony is not shown.’”).

presented by Appellants and Examples 10, 11, 12, 16 of Kaufhold that employ a specified combination of polycarbonate and polybutanediol adipate as a polyol in specific exemplified methods of forming polyurethane are not representative of all of the teachings of Kaufhold as explained above and in the Answer. Nor do the additional references to Examples 5 and 17 of Kaufhold by Appellants in their Briefs complete the picture as to Kaufhold's teachings, as we explained above. Also it is instructive to note that representative claim 1 does not require a molding composition having a specified tear property or heat resistance property, as argued in the Briefs as a patentable distinction. Thus, Appellants' arguments respecting the Examples do not dissuade us from agreeing with the Examiner that the evidence relied upon in the stated rejection presents a prima facie case of obviousness as to the claimed subject matter. In addition, we agree with the Examiner that Appellants' Examples 1 and 2 are considerably more narrow in scope than the subject matter called for in representative claim 1. Thus, no conclusion can be reached from these Examples respecting tear strength and heat resistance properties for all polyurethanes that are encompassed by representative claim 1 as part of a molding composition in accordance therewith. Accordingly, no unobvious or unexpected combination of such properties has been established for the claimed subject matter by the limited Examples presented in the Specification and the Declaration of Dr. Peerlings for the reasons stated by the Examiner (Ans. 5-6.).

After all, it is well settled that the burden rests with Appellants to establish that the asserted results presented as being associated with the claimed invention are unobvious/unexpected, the comparisons are with the

closest prior art and they are commensurate in scope with the claimed subject matter. *See In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). Like the Examiner, we determine that Appellants have not met this burden for the claimed subject matter based on the evidence presented and argued.

We note, for example that both of the Examples allegedly presented in accordance with Appellants' claimed invention involve preparation of a polyurethane component using the same specific low-monomer polyether polyol (Acclaim[®] 4220) based on propylene oxide and ethylene oxide and prepared using a specified organo-metallic catalyst (Spec. Examples 1 and 2; Dr. Peerlings' Decl., Example 1; App. Br., Exhibit B). However, representative claim 1 does not limit the claimed molding composition to being made primarily from, much less solely from, a polyurethane made using Acclaim[®] 4220 as the polyol, with the exemplified ratios of HDI as the relative diisocyanate amount, with an amount of chain extender as exemplified, and together with an amount of Irganox[®] 1010 and dibutyltin dilaurate as employed in these two Examples. *See In re Dill*, 604 F.2d 1356, 1361 (CCPA 1979). Also, Appellants have not fairly explained why the showing involving two tested products manufactured using one specific polyol in making the polyurethane under particular specified conditions as noted above and in the Answer is a showing co-extensive with the scope of representative claim 1 on appeal, which is not so limited.

Also, the experiments presented in the Specification employ a welter of unfixed variables, and thus no true comparison of results is possible. *See In re Dunn*, 349 F.2d 433, 439 (CCPA 1965). We also note that the Declarant has not stated that the comparative results presented therein

establish “unexpected” properties for Example 1, much less unexpected properties that would accrue to all molding compositions commensurate in scope with the claimed subject matter (*see* Dr. Peerlings Decl. 2). Thus, Appellants’ argued contentions in this regard appear to be conjectural and unsubstantiated given the proffered evidence. In other words, Appellants have not rebutted the Examiner’s reasoning that the results are merely to be expected (Ans. 3-4). After all, expected beneficial results are evidence of obviousness, just as unexpected beneficial results are evidence of unobviousness. *See In re Skoll*, 523 F.2d 1392, 1397 (CCPA 1975); *In re Skoner*, 517 F.2d 947, 950 (CCPA 1975).

Based on the totality of the record, including due consideration of Appellants’ evidence and arguments, we determine that the preponderance of evidence weighs most heavily in favor of an obviousness determination for the claimed subject matter. Accordingly, we affirm the ground of rejection presented in this appeal for the reasons stated in the Answer and above.

ORDER

The decision of the Examiner to reject claims 1, 8, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Kaufhold in view of Smith 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)(1)(iv).

AFFIRMED

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