

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

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAKANORI CHIBA,
TAKUYA MATSUMOTO, KEIJI ONO
and TAKEHIRO SHIMIZU

Appeal No. 2002-1768
Application 09/538,786

ON BRIEF

Before WARREN, LIEBERMAN and DELMENDO, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 4 through 10. Claim 4 is illustrative of the claims on appeal:

4. A process for the production of a rigid polyurethane foam comprising reacting:
 - a) an aromatic polyisocyanate and
 - b) a polyether polyol prepared by addition polymerization of o-toluenediamine with an alkylene oxide
in the presence of
 - c) a blowing agent comprising cyclopentane and water in an amount up to 1.0 parts by weight for every 100 parts by weight of polyol,
and, optionally, in the presence of

at least cyclopentane and water, wherein the water is present in the blowing agent composition in an amount up to 1.0 parts by weight for every 100 parts by weight of polyol. Thus, the appealed claims encompass processes in which is used some amount of water, no matter how small, up to the stated amount.

The examiner finds that Dietrich teaches a process of producing a rigid polyurethane foam from the specified components, wherein cyclopentane and water can be the blowing agents (see cols. 1-3, particularly col. 2, lines 5-6, and col. 3, lines 3-4). The examiner further finds that Dietrich teaches that water is optional (col. 2, lines 5-6, and col. 3, lines 3-4) and uses 2.0 parts of water in the illustrative and comparative Examples (cols. 5-6). The examiner finds that the teachings of Dietrich thus differ from the claimed process as encompassed by appealed claim 4 in not teaching the range of water specified in appealed claim 4, and determines that one of ordinary skill in this art would have routinely arrived at the claimed range as an optimal or workable range by following the teachings of the reference, citing *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”). Thus, the examiner concludes that the claimed process is *prima facie* obvious over Dietrich in the absence of establishing the criticality of the claimed range, such as by showing an unexpected result.

We agree with the examiner’s analysis. Indeed, from the disclosure in Dietrich that water is an optional material in the process and that it can be present in the amount of 2 parts by weight for 60 parts by weight of polyol in the Examples, which is 3.33 parts by weight of water for every 100 parts by weight of polyol, one of ordinary skill in this art would have inferred from the reference that the amount of water which can be present ranges from 0 to 3.33 parts.¹ Thus, the claimed range is encompassed by the range taught by Dietrich, and the burden shifts to appellants to establish the criticality of the claimed range. See *In re Woodruff*, 919 F.2d 1575, 1578, 16

¹ It is well settled that a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in this art would have reasonably been expected to draw therefrom, *see generally, In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); presuming skill on the part of this person. *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

USPQ2d 1934, 1936 (Fed. Cir. 1990) (“The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. [Citations omitted.] These cases have consistently held that in such a situation, the applicant must show that the particular range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range. [Citations omitted.]”).

Accordingly, since a *prima facie* case of obviousness has been established over Dietrich by the examiner, we have again evaluated all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellants’ arguments. *See generally, 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).

We have carefully considered all of appellants’ arguments, which rely on “Oretel, *Polyurethane Handbook*, 2nd Ed. (1993)” (Oretel) (brief, sentence bridging pages 4-5). Appellants submit that “Dietrich et al. teach away from Appellants’ claimed invention . . . [because after] reading [Dietrich], one having ordinary skill in the art would have been discouraged from lowering the water content in the blowing agent to less than 1.0 by weight, as set forth in Appellants’ claimed process” (*id.*, page 4). Appellants contend that this person “would be discouraged from decreasing the amount of water,” apparently from that used in the Dietrich Examples, because “doing so would adversely affect” (1) “the hard segment content of product foams;” (2) “the exothermic heat required to complete polymerization and to vaporize the co-blowing agent;” and (3) the “foam cell pressure and leads to decreased compression strength of the foam” (*id.*, pages 4, 5 and 6). Appellants rely on pages 13, 40 and 249, pages 16 and 249, and page 13 of Oretel, respectively.

Appellants attribute a number of teachings to Oretel without pointing out where these particular teachings are found in the cited text. We find that the cited pages show that water reacts with isocyanates to form urea and carbon dioxide with the carbon dioxide functioning in the role of a blowing agent (page 13), which is only one method of including a blowing agent in a process for preparing foam, as other blowing agents can also be used (page 16); wherein “urea-containing hard segments . . . are formed from . . . water” (page 48) and “[u]nfortunately, CO₂ will quickly diffuse out of foams that are not covered with a diffusion-tight material . . . [and]

[t]he negative pressure that is created by this diffusion can cause a deformation of the foam” (page 249).

Upon carefully considering appellants’ arguments in light of the cited pages from Oretel, we find, as did the examiner (answer, page 5), that the arguments simply do not reflect any teachings of Dietrich, which specifically states that water is an optional material, thus leading one of ordinary skill in this art to consider that the presence of water is unnecessary in the process of this reference. Therefore, we are not persuaded by appellants’ arguments that Dietrich would have led one of ordinary skill in this art away from following the clearly intended teachings thereof. *Cf. In re Gurley*, 27 F.3d 551, 552-53, 31 USPQ2d 1130, 1131-32 (Fed. Cir. 1994) (“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference’s disclosure is unlikely to be productive of the result sought by the applicant. [Citations omitted.]”). Thus, while appellants’ argument and evidence may suggest a different modification of the teachings of the reference based on the amount of water that one of ordinary skill in this art may find desirable, it does not establish that this person would not use an amount of water at the lower end of the range taught by Dietrich, that is, little or no water. *cf. In re Geisler*, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997) (“The statement in Zehender that ‘[i]n general, the thickness of the protective layer should not be less than about [100 Angstroms]’ falls far short of the kind of teaching that would discourage one of ordinary skill in the art from fabricating a protective layer of 100 Angstroms or less.”).

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in Dietrich with appellants’ countervailing evidence of and argument for nonobviousness and conclude that the claimed invention

encompassed by appealed claims 4 through 10 would have been obvious as a matter of law under 35 U.S.C. § 103(a).²

The examiner's decision is affirmed.

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

AFFIRMED

CHARLES F. WARREN)	
Administrative Patent Judge)	
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PAUL LIEBERMAN)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
)	
ROMULO H. DELMENDO)	
Administrative Patent Judge)	

Patent Department

² The examiner compares Dietrich with the claimed processes encompassed by appealed claims 4 through 8, but does not address the claimed products encompassed by appealed claims 9 and 10, styled in product-by-process format based on the same process. Thus, it seems that the examiner has not considered the separate patentability of the product claims over the product taught by Dietrich. *See generally, In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985); *In re Wertheim*, 541 F.2d 257, 271, 191 USPQ 90, 103-04 (CCPA 1976) (“These claims are cast in product-by-process form. Although appellants argue, successfully we have found, that the [reference] disclosure does not suggest . . . appellants’ process, the patentability of the products defined by the claims, rather than the processes for making them, is what we must gauge in light of the prior art.”). Such consideration is not necessary here as appellants have stipulated that all of the claims stand or fall together (*see above* p. 2), and the examiner has established that on this record, the process is unpatentable. Accordingly, the examiner should separately consider the patentability of the claimed products with respect to the products of Dietrich upon any further prosecution of the appealed claims subsequent to the termination of this appeal.

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