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D E C I S I O N
of 29 May 2001

Case Number: T 0712/95 - 3.3.6

Application Number: 89909069.0

Publication Number: 0427769

IPC: B32B 7/12

Language of the proceedings: EN

Title of invention:

Breathable flexible laminates adhered by a breathable adhesive and methods for making same

Patentee:

W.L. Gore & Associates, Inc.

Opponents:

Akzo Nobel N.V.

Bayer AG, Leverkusen Konzernverwaltung RP Patente Konzern

Headword:

Moisture permeable laminate/GORE

Relevant legal provisions:

EPC Art. 52(1), 56

Keyword:

"Inventive step (no) - part of the claimed solution obvious"

Decisions cited:

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Catchword:

-



Case Number: T 0712/95 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 29 May 2001

Appellant:
(Proprietor of the patent)

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Respondents:
(Opponent 01)

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(opponent 02)

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 3 July 1995
revoking European patent No. 0 427 769 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Krasa
Members: H. H. R. Fessel
J. H. Van Moer

Summary of Facts and Submissions

- I. European patent No. 0 427 769 in respect of European patent application No. 89 909 069.0 filed on 25 July 1989 under the international application number PCT/US89/03200 and claiming a US priority of 27 July 1988 (US 224970) was granted on 9 September 1992 (Bulletin 92/37) on the basis of 29 claims.
- II. Notices of Opposition were filed on 25 May and 9 June 1993 respectively by the two Opponents (Respondents) based on the grounds of lack of novelty and inventive step (Article 100(a) EPC) as well as insufficiency of disclosure (Article 100(b)EPC) and were inter alia supported by the following documents still relevant in appeal proceedings:
- D1: US-A-4 532 316,
- D3: US-A-3 398 042,
- D4: EP-A-0 052 915, and
- D10: DE-A-3 142 706.
- III. By a decision given orally on 27 April 1995 and issued in writing on 3 July 1995, the Opposition Division revoked the patent for lack of inventive step of the subject-matter of Claim 1 of a set of 16 claims filed on 5 April 1995. This Claim 1 reads as follows:
- "1. A laminate in shoes having a moisture permeability of at least 120 g/m² x 24 h and a wet bond strength of at least 2.94 N/cm comprising

i) flexible layers having a combined moisture permeability of at least $140 \text{ g/m}^2 \times 24 \text{ h}$ wherein a first layer is leather or textile and a second layer is breathable, waterproof laminate, the layer being adhered by

ii) an adhesive continuously covering the layers, said adhesive having a moisture permeability of at least $1000 \text{ g/m}^2 \times 24 \text{ h}$ when measured in the form of a film of at least $25 \text{ }\mu\text{m}$ thickness;

said adhesive being a one-component, hydrophilic, block polyurethane having hard and soft segments and being the reaction product of a polyol containing oxyethylene units, a polyisocyanate and a chain extender, said chain extender having a molecular weight in a range lower than about 500 and having a functionality of 2 and a chain terminator reactive with residual isocyanate moieties,

wherein the reactants are employed in such proportions so as to satisfy the following equations:

$$\frac{EqNCO}{EqOH + EqCE} \geq 0.99$$

$EqCE > 0$,

wherein $EqNCO$ is the equivalent of the isocyanate species employed and $EqOH$ and $EqCE$ denote the respective molar equivalents of the polyol and chain extender employed."

The Opposition Division and the parties raised no doubts as to the admissibility of the amendments with regard to Article 123(2) and (3) EPC. The Opposition Division held the claimed subject-matter to be novel since the cited documents did not disclose all of the features of Claim 1 in combination.

Regarding the objection of lack of inventive step the

Opposition Division stated that the patent in suit was concerned with the technical problem to provide waterproof laminates in shoes so that these have an optimal microclimate (point 5.1 of the appealed decision). It held polyurethanes having residual hydroxy moieties to be covered by the definition of adhesive polymers of the patent under dispute. The solution to the problem achieved by the patent in suit was considered to be an obvious solution since its Claim 1 was broad enough to "cover subject-matter" already disclosed in D3.

Moreover it would have been obvious for a skilled person to eliminate the free hydroxyl groups knowing from D10 that they were susceptible to attack by water.

Furthermore, document D4 disclosed the use of polyurethanes similar to those of Claim 1 as moisture permeable coatings for fabrics thus rendering the use of such polyurethanes as adhesives obvious.

- IV. On 21 August 1995 an appeal together with payment of the prescribed fee was lodged against that decision by the Appellant (Patentee). In the Statement of Grounds of Appeal received on 3 November 1995 the Appellant disputed the alleged lack of inventive step based on D3 and D4.

The Appellant emphasized that the subject-matter of Claim 1 was a balanced system without or with only minimal excess of either -OH or -NCO groups. As shown in D10, lines 9 to 18 it was difficult in practice to completely avoid a surplus of one of the groups. Having this in mind, D3 did not suggest the inventive concept of the patent in suit but lead away from it since D3 clearly taught that the adhesive had to have an excess of hydroxyl groups (cf. Claim 1 and Example 1 of D3).

The Appellant submitted further that D10 taught nothing about altering polyurethanes having an excess of hydroxyl groups as disclosed in D3. D10 did also not teach polyurethanes for making laminates nor the use of such polymers as an adhesive, much less for making breathable, strong leather laminates suitable for shoes.

Finally the Appellant argued that the polyurethanes of the patent in suit were designed to have substantially all hydroxyl groups reacted with a polyisocyanate, creating high molecular weight polymers as result of a high degree of chain extension not chain termination.

The Appellant concluded that the cited state of the art did not render obvious the claimed subject-matter.

- V. In their written submissions the Respondents (Opponents) considered D3 to represent the most relevant prior art. They alleged that the polyurethane adhesive disclosed therein comprised the polyurethane of Claim 1 of the patent and disputed that the claimed subject-matter read on a balanced system free of any excess of either OH or NCO and therefore was clearly delimited from said prior art.

Respondent 1 (Opponent 01) alleged that a skilled person facing the problem of improving the bond strength of the laminates disclosed in D3 would automatically be confronted with two solutions in the same field of application. From D1 it would have been obvious to diminish the excess of isocyanate and from D10 to improve adhesive properties by diminishing the surplus of free hydroxyl groups.

Respondent 2 (Opponent 02) mainly argued that the argumentation provided by the Appellant was inconsistent since the arguments produced did not correspond to the subject-matter as claimed.

VI. After having been summoned to oral proceedings the Appellant and Respondent 2 withdrew their request for oral proceedings with letters dated 27 January and 17 February 1999, respectively. Respondent 1 who did not request oral proceedings informed the Board that he intended to attend oral proceedings fixed on 23 March 1999. The Board then cancelled the oral proceedings. Respondent 1 requested with its letter dated 18 March 1999 that said cancellation be undone or a new date be fixed unless the appeal be dismissed.

VII. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the claims and the description filed with letter dated 5 April 1995.

The Respondents requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. The Board sees no reason to deviate from the decision of the Opposition Division that the amendments made during the opposition proceedings were in conformity with the requirements of Article 123(2) and (3) EPC; these findings have not been disputed by the parties. The Board has, however, considerable doubts as to the admissibility of the replacement of the figure 1.1 given in the formula of Claims 15 or 16 of PCT/US/03200

by 0.99 in the equation in Claim 1 of the text of the application received by the EPO on 30 August 1990. Since the appeal fails however for other reasons, it is not necessary to consider this issue in detail

3. The Board considers, like the Opposition Division, the subject-matter of Claim 1 to be new which was no longer contested by the parties. No further details have to be given in this respect either.
4. The present patent relates to a laminate in shoes comprising a breathable flexible laminate adhered by a breathable adhesive and methods for making the same.

D3 relates to about the same subject, i.e. laminated leather products and a process for laminating leather without losing any of the advantageous properties of natural leather (column 1, lines 11 to 15).

D4 is directed to a breathable, nonporous polyurethane film for coating on fabrics to make them waterproof (page 1, lines 2 to 6, and page 5).

D1 concerns reactive, segmented, phase-separating, polyether polyurethane prepolymers with physical properties such as a high moisture vapour transmission rate rendering them well suited for use as adhesives, coatings and sealants (column 17, lines 36 to 40 in conjunction with lines 61 to 65).

- 4.1 Since the profile of the characteristics of the laminates of the disputed patent and that of D3 is about the same, D3 is considered to represent the most relevant prior art.

- 4.2 The problem to be solved vis-à-vis that prior art by the patent in suit was seen in the provision of laminates with good dry and improved wet adhesive strength (see column 3, lines 24 to 29 in combination with column 4, lines 10 to 12 of the patent in suit).
- 4.3 The solution given in Claim 1 of the present patent was the use of an adhesive as specified in that claim.
- 4.4 In its Grounds of Appeal the appellant emphasized that the polymer system of Claim 1 of the patent was a balanced polymer system where there was no excess of either -OH or -NCO or at least where any surplus of either groups was minimal. The appellant considered that it has been a clear object of the patent in suit to avoid an excess of either group.
- 4.5 However, in the Board's judgement, Claim 1 reads on subject-matter in which there may well be a surplus of -NCO groups as expressed by the value of >0.99 (in the documents filed originally >1.1) in the equation given in Claim 1 of the patent in suit. In addition thereto a slight surplus of OH-groups is also comprised by the claimed subject-matter.

This means that the subject-matter allegedly claimed and forming the basis of the Appellant's arguments does not correspond to the subject-matter in fact claimed in Claim 1.

The mere mention of a further reactant, i.e. a chain terminator reactive with residual isocyanate moieties without giving any worked examples or indicating the quantity and the quality of such a terminator, cannot be understood as an addition in such an amount that the

adhesive will be substantially devoid of any -NCO groups as argued by the appellant. This supports the above conclusion that the balanced system referred to by the appellant is comprised by the subject-matter of Claim 1 but not delimited thereto.

5. The further investigation of inventive step is based on the above interpretation of Claim 1 of the patent in suit.

5.1 In view of Examples 1 to 3 of the patent as amended (Examples 4 to 6 of the patent as granted), the Board considers the problem defined above (see point 4.2) to be plausibly solved by adhesives comprised by the solution specified in Claim 1.

It has now to be considered whether that solution involves an inventive step.

5.2 As already pointed out by the Opposition Division, a person skilled in the art would have known from common general knowledge - the existence of which was not contested by the Appellant - that the presence of OH-groups could have a negative effect on wet adhesive strength since OH-groups are susceptible to attack by water.

It would thus have been obvious to use adhesives having only a slight excess of OH-groups falling under the equation given in Claim 1 of the patent in suit.

The polyurethane adhesive of D3 was prepared with less than an equivalent quantity of polyisocyanate than that required to react with all of the hydroxyl groups of the water soluble organic dihydroxy compound used. Consequently, it contains an excess of hydroxyl groups. However, since D3 is silent as to the amount of that excess, i.e. the excess may also be such a slight one

as comprised by the equation given in Claim 1 of the patent in suit (see items 4.5) the Board concurs with the Opposition Division that said part of the claimed solution would have been obvious for a person skilled in the art as the improvement claimed for this subject-matter of the patent in suit would already have been achieved with adhesives encompassed by D3 and having only a minimal surplus of OH-groups.

5.3 For the reasons given above the Board considers the subject-matter of Claim 1 of the patent in suit not to involve an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



G. Rauh



P. Krasa

Donec 29/05/01



