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File Number: T 279/89 - 3.3.3

Application No.: 84 303 584.1

Publication No.: 0 128 691

Title of invention: Reaction injection moulded polyurethane elastomers

Classification: C08G 18/50

D E C I S I O N
of 3 July 1991

Applicant: TEXACO DEVELOPMENT CORPORATION

Headword:

EPC Article 54

Keyword: "Novelty (no) - criteria for selection inventions not satisfied"

Headnote



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Boards of Appeal

Chambres de recours

Case Number : T 279/89 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 3 July 1991

Appellant : TEXACO DEVELOPMENT CORPORATION
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Decision under appeal : Decision of Examining Division of the European
Patent Office dated 8 December 1988 refusing
European patent application No. 84 303 584.1
pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : F. Antony
Members : C. Gérardin
M. Aúz Castro

Summary of Facts and Submissions

- I. The European patent application No. 84 303 584.1 filed on 25 May 1984, claiming priority of 8 June 1983 from an earlier application in the United States and published under the publication number 128 691, was rejected by a decision of the Examining Division dated 8 December 1988.

That decision was based on the set of nine claims filed on 26 April 1988, of which Claim 1 read as follows:

"A method for improving the green strength characteristics of a reaction injection moulded elastomer formed by injecting into a mould cavity, a formulation comprising a methylene bis(phenylisocyanate) in the form of its 2,4'- and 4,4'-isomers, an active-hydrogen-containing polyether and an amine-terminated chain extender, wherein the polyether is a primary or secondary amine-terminated polyether having a molecular weight of more than 1,500 and wherein more than 50% of the active hydrogens are in the form of amine hydrogens; said method being characterised in that the methylene bis(phenylisocyanate) contains more than 10% of the 2,4'-isomer."

Claims 2 to 5 were dependent claims directed to preferred embodiments of the main claim. Claim 6 was an independent claim concerning a reaction injection moulding (RIM) elastomer obtainable from a composition whose definition was similar to that in Claim 1 and wherein the methylene bis(phenylisocyanate) (which will be called MDI hereinafter) contained 10 to less than 20% of the 2,4'-isomer. Claims 7 to 9 were dependent claims dealing with preferred elastomers according to Claim 6.

II. The only ground for that decision was non-compliance with the requirement of novelty under Article 54(3) EPC with regard to the teaching of both EP-A1-81 701 (document (1)) and EP-A1-93 861 (document (2)). More specifically, it was stated in that decision that both citations described the use in RIM processes of a combination of an aromatic polyisocyanate, in particular the MDI isomer mixture, a polyether with amine terminal groups and a diamine chain extender. Document (1) taught to use up to 50% of the 2,4'-isomer. Document (2) mentioned the MDI isomer mixtures disclosed in US-A-3 362 979 (document (3)) as particularly suitable, such mixtures containing 20 to 95% of the 2,4'-isomer. It followed that the claimed subject-matter was anticipated for the five Contracting States designated in the application. Further, it was specified that the incorporation of a merely descriptive feature, i.e. the improved green strength characteristics, into Claim 1 not only did not overcome the objection of lack of novelty raised initially, but additionally made the claim objectionable under Article 84 EPC.

III. On 4 February 1989 a Notice of Appeal was lodged against that decision with payment of the prescribed fee. Together with the Statement of Grounds of Appeal filed on 9 March 1989 the Appellant submitted three new sets of claims, in which Claim 1 was still drafted as a method claim and the amount of the 2,4'-isomer defined as follows:

- request A: greater than 10%,
- request B: greater than 10%, less than 20%,
- request C: greater than 10% and up to 15%.

In support of novelty of these subject-matters the Appellant argued in particular that, although the definition of both the polyether and the amine chain extender according to document (1) might overlap with the

definition of the corresponding compounds according to the application in suit, these definitions were not coextensive. As to the MDI isomer mixture, the fact that it did contain more than 50% of the 4,4'-isomer did not necessarily imply that up to 50% was the 2,4'-isomer. As regards document (2), the application in suit was different in the nature of the aromatic polyisocyanate.

Further, the rejection of the application after one single communication was regarded as a procedural violation.

- IV. In a communication sent together with the summons to oral proceedings the Board took provisionally the same view as the Examining Division regarding the interpretation of documents (1) to (3).

Additionally, the Board introduced DE-A-2 624 526 (document (4)), which was referred to in document (1) on page 7, lines 15 to 22, as describing particularly suitable polyisocyanates and wherein MDI isomer mixtures comprising 0.5 to 25% of 2,4'-isomer were explicitly mentioned.

- V. During oral proceedings held on 3 July 1991 the Appellant withdrew request A. Although the interpretation of document (1) in the light of the disclosure of document (4) was not disputed, he would not regard the resulting combined teaching as an explicit, i.e. positive, description of the subject-matter according to the remaining requests B and C. In particular, the contrast between the broad class of polyisocyanates envisaged in the prior art and the specific MDI isomer mixture required according to the application in suit was underlined. Further, it was argued that the requirement of novelty as defined in the Guidelines for Examination in the EPO was met.

- VI. The Appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the set of claims corresponding to request B as main request or, alternatively, on the basis of the set of claims corresponding to request C as auxiliary request.

In case the Board should consider the claimed subject-matter according to request B or request C not to be novel, he further requested to refer the question to the Enlarged Board of Appeal "as to whether lack of novelty can be established on the basis of a disclosure which was effective only in accordance with the provisions under Article 54(3) EPC, which does not explicitly disclose the invention claimed, and which contains no clear and explicit directions such that the skilled person would inevitably arrive at the result falling within the terms of the claims".

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.
2. The current wording of the claims does not give rise to any objections under Article 123(2) EPC.

In substance, the wording of Claim 1 according to requests B and C differs from that of Claim 1 as originally filed by the qualitative definition of MDI, i.e. the identification of the two isomers present, as well as by the amount of the 2,4'-isomer. The fact that MDI is used in the form of a mixture of 2,4'- and 4,4'-isomers corresponds to the definition given on page 1, lines 21 to 24 of the original documents; that composition is

mentioned as well in US-A-3 394 164, which is quoted in the application in suit (page 4, last paragraph) and wherein it is specified that MDI contains about 90% of the 4,4'-and about 10% of the 2,4'-isomer (column 1, lines 49 to 51). The lower limit of the range defining the amount of the 2,4'-isomer according to requests B and C, i.e. greater than 10%, is originally disclosed on page 1, lines 21 to 24; page 3, lines 27 to 29 and page 4, last paragraph. The upper limit in the case of request B constitutes a disclaimer to the value of 20% disclosed in document (3); the upper limit of 15% in the case of request C corresponds to the subject-matter of original Claim 4.

The ranges regarding the amount of the 2,4'-isomer have been amended accordingly in both Claims 5 drafted as independent product claims. Further, the dependent Claims 2 to 4 and 6 to 8 have been maintained unamended.

3. Document (1) describes a process for the production of elastic moulded articles by reacting a mixture comprising
- (a) an aromatic diisocyanate and/or polyisocyanate,
 - (b) a polyether having at least two isocyanate-reactive groups and a molecular weight from 1,800 to 12,000 in which at least 50% of the isocyanate-reactive groups are primary and/or secondary amine groups,
 - (c) a diamine having a molecular weight from 108 to 400 and primary and/or secondary aromatically bound amino groups and
 - (d) an internal mould release agent

using an RIM technique (claim 1).

- 3.1 The above general definitions of components (b) and (c) fully meet the requirements specified for these compounds

in Claim 1 according to requests B and C. Furthermore, there is even a close correspondence between the amino polyethers (b) more specifically envisaged in document (1) (page 8, line 1 to page 10, line 20) and those quoted as suitable in the application in suit (page 2, line 4 to page 3, line 13), as well as between the aromatic diamine chain extenders (c) explicitly mentioned in document (1) (page 11, line 1 to page 12, line 3) and those exemplified in the application in suit (page 3, lines 14 to 23). This correspondence was no longer disputed by the Appellant during oral proceedings.

Nor can the presence in the prior art compositions of an internal mould release agent be regarded as a distinguishing feature, since such additive, far from being excluded by the wording of both Claims 1, wherein the compositions are defined as "comprising" its various components, is in fact mentioned and exemplified in the description of the application in suit (page 6, lines 10 to 15).

- 3.2 As to component (a), document (1) mentions that the preferred isocyanate compounds are generally polyisocyanates or polyisocyanate mixtures of the MDI series, in particular those described in document (4), which are liquid at room temperature, have an average isocyanate functionality of from 2 to 2.2, and contain the 4,4'-isomer as the main component; the modification products based on mixtures of 2,4'- and 4,4'-isomers are included as well (page 7, lines 15 to 30).

Document (4), thus incorporated into document (1) by reference, is concerned with the modification of MDI based mixtures containing at least 85 percent by weight of MDI isomers with subequivalent quantities of aliphatic diols (Claim 1). Those MDI isomer mixtures are said to

contain 0 to 5 percent by weight of the 2,2'-isomer, 0.5 to 25 percent by weight of the 2,4'-isomer and 70 to 94 percent by weight of the 4,4'-isomer (page 7, paragraph 2).

3.3 Without disputing the fact that the content of a document can be incorporated by reference into the teaching of another document and that in the present case, consequently, the above structural and compositional features regarding MDI were part of the disclosure of document (1), the Appellant argued in the first place that the resulting definition of the polyisocyanates according to the latter document was in fact much broader than the MDI isomer mixture explicitly required in the application in suit. More specifically, the Appellant put forward that the polyisocyanate compounds actually envisaged in the prior art encompassed prepolymers, i.e. compounds containing urethane groups resulting from the reaction of the above MDI mixtures with subequivalent quantities of aliphatic polyols of various molecular weights, as well as di- and/polyisocyanates modified by the partial carbodiimidation of the MDI mixtures, all categories of polyisocyanate compounds not falling within the terms of Claim 1 according to requests B and C.

This argument cannot be accepted by the Board in view of both the wording of these two claims and the description of the application in suit. The said claims are directed to a method using a certain composition "comprising an MDI"; such wording, which by no means can be regarded as limiting, leaves open the possibility of having further ingredients present in the composition. Moreover, the description of the application in suit, which explicitly specifies that MDI containing the appropriate amount of 2,4'-isomer may be in the form of pure MDI, quasi prepolymer of MDI or modified MDI, which further indicates

the formulae of the carbodiimide and uretonimine compounds derived from MDI, and which even makes reference to commercial products of those types (page 3, line 27 to page 4, line 25), does not justify the restrictive interpretation given by the Appellant to the claimed subject-matter. In the Board's view, on the contrary, the scope of Claim 1 according to requests B and C unequivocally encompasses these various embodiments.

- 3.4 In the second place, the Appellant objected that the range defining the amount of the 2,4'-isomer in the MDI mixture in the prior art, i.e. 0.5 to 25%, was in fact a broad range with regard to the amounts required in Claim 1 according to requests B and C, which for the sake of simplicity will be defined as respectively 10 to 20% and 10 to 15%, and that, consequently, the claimed subject-matter should be regarded in both cases as a selection invention.
4. It follows that the issue of novelty boils down to the question whether the criteria for a selection to be novel are met in the present circumstances.
- 4.1 In the Decision T 198/84 "Thiochloroformiates" published in OJ EPO 1985, 209 an Appeal Board has regarded it as insufficient for establishing novelty, if the definition of an invention would differ only in its wording from the prior art disclosure; what has to be established in the examination as to novelty is whether the state of the art is likely to reveal, i.e. make available to the public, the content of the invention's subject-matter to the skilled person in a technical teaching (Reasons for the Decision, point 4, second paragraph). In that case where, like in the present one, the issue of novelty is raised in terms of selection invention, the Board had considered that a selection of a sub-range of numerical values from a

broader range is possible when each of the following criteria is satisfied:

- (i) the selected sub-range should be narrow;
- (ii) the selected sub-range should be sufficiently far removed from the known range illustrated by means of examples;
- (iii) the selected area should not provide an arbitrary specimen from the prior art, i.e. not a mere embodiment of the prior description, but another invention (purposive selection).

These requirements are not met in the present case for the following reasons.

~~4.1.1~~ The present ranges of 10 to 20% and 10 to 15% in Claim 1 according to requests B and C cannot be regarded as narrow selections, since they correspond to approximately 40 to 80% and respectively 40 to 60% of the range known from the prior art. Moreover, the ranges newly defined are not near the lower or upper end of that known range, but right in the middle thereof. For this reason alone, novelty of the ranges in question cannot be acknowledged.

4.1.2 In the absence of any specific information regarding the composition of the MDI isomer mixture of polyisocyanates 1 to 6 in document (4) (pages 11 and 12) used in the examples, nothing can be said about the above criterion (ii).

4.1.3 Neither technical evidence demonstrating that the use of the 2,4'-isomer according to the claimed amounts leads to any particular properties, nor even a single argument in favour of a purposive selection have been provided by the Appellant. The reference in general terms in the description of the application in suit to enhanced green

strength properties cannot be regarded as evidence that this specific improvement occurs only for compositions containing amounts of the 2,4'-isomer within the ranges presently claimed. In this respect, the comparison between the properties achieved with the composition according to Example 4 and any of the compositions according to Examples 1 to 3 is not conclusive, since the latter are comparative examples, wherein the polyether used, according to the definition of THANOL SF-5505 at the bottom of page 7, contains hydroxyl end groups; this means that the advantages of compositions based on polyethers with amino end groups, such as JEFFAMINE T-5005, over compositions based on standard polyether polyols, referred to in Example 4 (page 9, lines 20 to 24) cannot be related to the amount of 2,4'-isomer in the MDI mixture, which is the critical compositional feature, and thereby demonstrate any difference with regard to the prior art teaching.

In the Board's view, it has thus not been made plausible that the limits of the ranges specifying the amount of the 2,4'-isomer could define a technical area within which the reaction injection moulded compositions would exhibit superior properties and outside which these properties would be inferior, whereby a new teaching would be given. This means that the selected ranges must be regarded as having the same properties and capabilities as the whole range and that what has been selected is only an arbitrary specimen from the prior art (compare Decision T 198/84, point 7).

- 4.1.4 For these various reasons, the ranges defining the amount of the 2,4'-isomer in claim 1 according to requests B and C do not meet the criteria for selection inventions as specified above.

4.2 In the Decision T 26/85 "Thickness of magnetic layers" published in OJ EPO 1990, 22 the Board has considered (points 8 and 9) that what is made available to the public by means of a written document should not be restricted to the explicit disclosure, but extends to the whole content, i.e. to the information actually given to the person skilled in the art. When that information is sufficient to enable the skilled man to practice the technical teaching which is the subject-matter of the disclosure, taking into account also the general knowledge in the field to be expected of him, novelty can no longer be acknowledged. It follows, therefore, that a realistic approach in assessing the novelty of an invention under examination over the prior art in a case where overlapping ranges of a certain parameter exist, would be to consider whether the person skilled in the art would in the light of the technical facts seriously contemplate applying the technical teachings of the prior art document in the range of overlap. If it can be fairly assumed that he would do so, it must be concluded that no novelty exists.

This approach to novelty having been defined in the case of overlapping ranges, its reasoning applies all the more in the present case, where the new range is entirely within the known range. The question which arises is thus whether the skilled man has particular reasons to consider only the two ranges defining the amount of the 2,4'-isomer in claim 1 according to requests B and C, and to disregard the rest of the range known from the prior art teaching. As noted in point 4.1.3 above, nothing in that prior art would suggest any kind of discontinuity of the properties of the moulded compositions, let alone define specific amounts of the 2,4'-isomer outside which the alleged properties would not be achieved. This means that nothing in the prior art can dissuade the skilled man from considering the known range of 0.5 to 25% as a whole and

carrying out the known method by using any amounts of the 2,4'-isomer, thus, in particular, amounts within the ranges presently claimed; for this reason, these two ranges cannot be regarded as novel features.

- 4.3 The whole content approach has also been advocated by the Board in the Decision T 124/87 "Copolymers" published in OJ EPO 1989, 491. In that case, according to point 3.4 of the Reasons for the Decision, the Board has considered that the disclosure of a prior art document, which is directed to a process of preparation of polymers, is clearly not limited to the particular polymers, whose preparation is explicitly exemplified, but extends to the general class of polymers in the description of that document. The general class of polymers has thus been made available to the skilled man in a technical teaching, even though only certain polymers within this class are described as having been prepared. It is then concluded that the copolymers as defined in the claims of the patent in suit form a major part of this general class of polymers, thus form part of the state of the art and, consequently, can no longer be regarded as novel.

In the present case, on the basis of these reasons the prior art disclosure can no longer be restricted to the use of the 2,4'-isomer according to the sole two values explicitly mentioned in the prior art, i.e. the upper and the lower limits of the known range, as the Appellant argued repeatedly during oral proceedings. In the Board's view, on the contrary, what has been made available to the public is both a method involving the use of that specific isomer in any amount within the range known from the prior art, and the general class of polymers which can be prepared on the basis of that teaching. This would extend undoubtedly to sub-ranges, such as those defined in claim 1 according to requests B and C.

4.4 More generally, the Decision T 12/81 "Diastereoisomers" published in OJ EPO 1982, 296 underlines in points 5 and 7 to 9 of the Reasons for the Decision that the concept of novelty must not be given such a narrow interpretation that only what has already been described in the same terms is prejudicial to it. The teaching of a cited document is not confined to the detailed information given in the examples of how the invention is carried out, but embraces any information regarding the starting substance(s) and the reaction conditions in the claims and description enabling a person skilled in the art to carry out the invention. Moreover, for such a prior publication to have prejudicial effect, it is not necessary for the starting compound or the process variant to be given special prominence. The essential point is what a person skilled in the art, carrying out the invention, could be expected to deduce from it.

From these considerations, which go against the restrictive interpretation of prior art documents defended by the Appellant, it is evident that in the present case the whole range between 0.5 and 25% has been described as equally suitable and that consequently the method can be carried out with the same result for any amount of the 2,4'-isomer between these two limits. This excludes the possibility of restoring novelty by means of sub-ranges.

4.5 The above decisions concur thus to give a somewhat broader definition of the concept of novelty and to regard the content of the state of the art not only in terms of explicit disclosure, but in terms of information made available to the public. This leads to substitute the restrictive approach to novelty based on a mere photographic comparison of individual or isolated features by the so-called whole content approach incorporating the

interpretation which the skilled man derives from that prior art teaching. These decisions, which have been confirmed in numerous unpublished decisions, represent the constant jurisprudence of the Boards and, thereby, the established practice at the EPO. In the present case, for the reasons given above, they lead to deny novelty of the claimed subject-matter.

That approach does not contradict the Guidelines for Examination in the EPO, which the Appellant referred to during oral proceedings. In particular, it does not involve considering well-known equivalents or alternative embodiments not disclosed in the prior art, which would be a matter of obviousness (Guidelines, C-IV, 7.2); further, it is in line with the practice recommended in C-IV, 7.5, which invites the consideration of both the explicit and implicit disclosure of a document.

5. Claim 1 according to requests B and C not being allowable because of lack of novelty, the other independent claims, i.e. Claim 5 directed to RIM elastomers according to both requests, share their fate, since a request can only be decided upon as it stands and no further auxiliary requests have been submitted.

6. As far as the Appellant's request is concerned to refer his question quoted under point VI to the Enlarged Board of Appeal, the Board regards this question as merely rhetorical, for it does not reflect the reality of the case for the following reasons:
 - (i) The European patent applications mentioned in Article 54(3) EPC do not represent a "minor" state of the art, as the Appellant's question suggests by the inclusion of the word "only". On the contrary, according to Article 54(3) the content of European

patent applications with an earlier filing date shall be considered as comprised in the state of the art. It follows that the same criteria of novelty have to be applied as in the case of Article 54(2) EPC.

(ii) Contrary to the opinion expressed by the Appellant, the content of the application in suit is already explicitly disclosed in one single earlier filed document. Document (1) refers to the polyisocyanate mixtures described in document (4) as preferred isocyanate compounds, whereby the teaching of document (4) is incorporated into the disclosure of document (1) by reference. During oral proceedings the Appellant even agreed that such incorporation of the content of a reference document resulted in a single disclosure. For the sake of completeness, however, the Board refers to the Decision T 153/85 "Alternative claims" published in OJ EPO 1988, 1 (point 4.2, third paragraph) as well as to the Guidelines, C-IV, 7.1.

(iii) Again contrary to the Appellant's contention, document (1) does give clear and explicit directions for the skilled man to arrive at a result falling within the terms of Claim 1 according to requests B and C. From the reasons given in point 4 above, it is evident that the approach followed by the Board to reach that conclusion is fully in line with the prevailing practice regarding the selection inventions.

In view of the foregoing, there is thus no reason to refer the question quoted under point VI to the Enlarged Board of Appeal; the corresponding request must therefore be rejected.

7. In the Statement of Grounds of Appeal (page 2, paragraphs 1 to 3) the Appellant argued that the rejection of the application after one single written communication, without even a further telephone communication, was regarded as a procedural violation. Although that procedural matter was no longer raised during oral proceedings, the Board deems it appropriate to observe that the sole introduction of a descriptive feature or parameter, i.e. the green strength, into claim 1 did not overcome the lack of novelty of the claimed subject-matter and that, consequently, the Examining Division was entitled to issue the decision of rejection pursuant to Article 97(1) EPC (see Decision T 300/89 "Amendments", to be published; abstract published in OJ EPO 9/1990).

Order

For these reasons, it is decided that:

1. The appeal is dismissed.
2. The request to refer a question of law (see point VI above) to the Enlarged Board is rejected.

The Registrar:

The Chairman:

P. Martorana

F. Antony