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Case Number : T 433/86

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 11 December 1987

Appellant : IMPERIAL CHEMICAL INDUSTRIES PLC
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Respondent : BASF Aktiengesellschaft
(Opponent) Carl-Bosch-Strasse 38
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Representative :

Decision under appeal : Decision of the Opposition Division of the European
Patent Office dated 13 October 1986 revoking
European patent No. 0 013 487 pursuant to
Article 102(1) EPC.

Composition of the Board :

Chairman : K. Jahn
Members : F. Antony
G.D. Paterson

Veröffentlichung im Amtsblatt	Ja/Nein
Publication in the Official Journal	Yes/No
Publication au Journal Officiel	Oui/Non



Aktenzeichen / Case Number / N° du recours : T 433/86

Anmeldenummer / Filing No / N° de la demande : 79 302 794.7

Veröffentlichungs-Nr. / Publication No / N° de la publication : 0 013 487

Bezeichnung der Erfindung: Modified diisocyanate compositions and polyurethanes
Title of invention: thereof
Titre de l'invention :

Klassifikation / Classification / Classement : CO8G 18/76

ENTSCHEIDUNG / DECISION

vom / of / du 11 December 1987

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /
Titulaire du brevet : ICI PLC

Einsprechender / Opponent / Opposant : BASF AG

Stichwort / Headword / Référence :

EPO / EPC / CBE Articles 54, 56, 114, 123(2)

Kennwort / Keyword / Mot clé : "Novelty (yes) - molecular weight range disclosed for a single component, but not for claimed combination of components" - "Inventive step (yes)" - "Late-filed documents (disregarded)" - "New matter (no) - delimitation by features excluding prior art, but not mentioned in original documents"

Leitsatz / Headnote / Sommaire

Summary of Facts and Submissions

I. European patent application No. 79 302 794.7, which had been filed on 05.12.79, claiming British priority of 11.12.78, was granted as European Patent No. 13 487 on 04.04.84 on the basis of five claims. The independent Claims 1 and 5 then read:

"1. An isocyanate composition derived from diphenylmethane diisocyanate comprising:

(A) the product of reaction of 90-45% by weight diphenylmethane diisocyanate with 10-55% by weight of a polyether of molecular weight from 600 to 10 000, said polyether being an alkoxyated polyol or polyamine;

(B) an uretonimine modified diphenylmethane diisocyanate,

the weight ratio of A to B being from 19:1 to 1:1.

5. A polyurethane product made by the reaction of a substance containing active hydrogen groups and an isocyanate composition according to any one of Claims 1 to 4."

(Henceforth, the abbreviation "MDI" is used for "diphenylmethane diisocyanate".)

II. On 08.12.84, the Respondents filed a notice of opposition against the patent, requesting its complete revocation, because it was not patentable within the meaning of Articles 52 to 57 EPC in the light of

(1) US-A-4 102 833

and because it did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by the skilled person.

III. By the Decision dated 13.10.86 the Opposition Division revoked the patent. On the basis of an amended Claim 1, differing from the granted version in that the lower molecular weight limit of the polyether referred to as component A was given as "above 1500" instead of "600", and of unchanged Claims 2 to 5, the Opposition Division held that the claimed subject-matter was novel; for (1) did disclose, separately, both components A and B as defined in Claim 1, but did not disclose the combination of component B with a component A in which the molecular weight of the polyether was above 1500. However, in the light of the existing problem, viz. to provide MDI stabilised against crystallisation and suitable for the production of polyurethane products with favourable properties, the skilled reader of (1) would not feel barred from using higher-molecular weight polyethers, which are stated in (1) to be unsatisfactory, but only for reasons which are not relevant to the present problem; rather, as (1) teaches use of a combination of components A and B to inhibit crystallisation, it was obvious for the skilled person to disregard the molecular weight limitation of (1). In the absence of a demonstrated surprising effect, the claimed use of a higher-molecular weight polyether did not involve an inventive step.

IV. A Notice of Appeal was filed by the proprietor of the patent (Appellants) on 22.11.86, and the appeal fee paid. The Statement of Grounds was submitted on 11.02.87, with attached description of comparative experiments showing considerably better storage stability for a composition

employing a polyether of molecular weight 3750 than for compositions involving polyethers of molecular weights 310 and 1500. The Appellants argue that this supports inventivity. They further argue that, even in the absence of such comparative experiments, it would not have been obvious without using hindsight to employ higher-molecular weight polyethers.

The Appellants request that the impugned decision be set aside and, in effect, that the patent be maintained as amended before the Opposition Division.

- V. The Respondents (Opponents) contest the Appellants' arguments. They call their comparative experiments non-conclusive, without, however, challenging the figures thereof. They point out that (1) recommends not only against polyethers of too high, but also against polyethers of too low molecular weight, and conclude that, therefore, the skilled person would employ higher-molecular weight polyethers whenever the consequent lower cure rate was not decisive.

Furthermore, they cite two fresh documents,

- (2) DE-A-2 811 354 and
- (3) GB-B-1 369 334,

purportedly affecting inventivity. The Respondents request that the appeal be rejected.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC; it is thus admissible.

2. The Respondents' opinion (page 3, paragraph 2, of their submission dated 05.06.87) that "inventive step could not be based upon the higher molecular weight" because the original document claimed protection equally ("gleichermaßen") for the range from 600 to 10 000 can be interpreted as an objection to the formal admissibility of the amendment. In the Board's view, when there is an overlap between the prior art and the claimed subject-matter defined in generic terms, a specific prior art may be excluded even in the absence of support for the excluded matter in the original documents. Such an exclusion may be achieved by way of a disclaimer, or preferably in positive terms if this leads to a clearer and more concise language (cf. Decision T 04/80, "Polyetherpolyols/Bayer", OJ EPO 4/1982, 149). In the present case, the language of Claim 1 as amended is in accordance with the latter possibility. As will be shown hereinbelow, restriction of the molecular weight range of the polyether component from "600 to 10 000" (as claimed originally and in the patent as granted) to "above 1500 to 10 000" (as now claimed) was necessary in order to distinguish the claimed subject-matter from (1), where a molecular weight range of between 240 and 1500 has been disclosed.
3. The insufficiency attack in the opposition has, at the appeal stage, been maintained to the extent only on page 4, paragraph 2, of the submission dated 05.06.87. The statement therein that certain polyethers were "totally unsuitable" being a mere unproven allegation, this Board sees no reason why maintenance of the patent should be prejudiced on this ground.
4. Documents (2) and (3) were relied upon by the Respondents in support of the grounds of opposition for the first time in their submission dated 5 June 1987, more than two years after the nine months opposition period. The Respondents

have not set out any circumstances which may have prevented them from mentioning these documents earlier.

- 4.1. The introduction of new documents at the appeal stage of opposition proceedings may not be allowable, in exercise of the Board's discretion under Article 114(2) EPC, depending especially upon the degree of relevance of such documents to the grounds of opposition, and also upon the lateness (see Decision T 271/84, "Gas purification/Air Products", OJ EPO 9/1987, 405; also Decision T 156/84 dated 9 April 1984 "Pressure swing adsorption/Air Products", to be published).
- 4.2. In the present case the Board has considered the relevance of (2) and (3) and found them to be no more relevant than (1). Hence, in the exercise of its discretion, (2) and (3) are not admitted into the proceedings.
5. The invention as claimed in Claim 1 relates essentially to an isocyanate composition derived from MDI, comprising
 - (A) the reaction product of an alkoxyated polyol or polyamine ("polyether") with MDI, and
 - (B) an uretonimine-modified MDI ("liquid MDI").
6. Isocyanate compositions of such type, with the molecular weight of the "polyether" component limited to 240-1500, are known from the closest prior art (1). While (1) describes the composition of the "liquid MDI" in different terms from the patent-in-suit, it is not in dispute between the parties that the former is, for all practical purposes, identical to component B of the latter. The ratio between components (A) and (B) according to (1) - see, for

instance, Claim 2 - corresponds to a large extent to that of the patent-in-suit.

7. The problem underlying the patent-in-suit opposite (1) can be seen in providing an MDI composition which is better stabilised against crystallisation.
8. As a solution to the above problem, the patent-in-suit proposes the MDI composition of Claim 1, according to which - expressed in an abbreviated manner - it comprises a component A obtained from 90-45% by weight of MDI and from 10-55% by weight of a "polyether > 1500-10 000", and it further comprises component B, the weight ratio of A to B being from 19:1 to 1:1. That this proposal does actually solve the existing problem is credible in view of the description of comparative experiments submitted together with the appeal grounds, and of Table III and page 7, lines 39 to 44, read in conjunction with Table II of the patent as granted.
9. The novelty of Claim 1 is evident from the figure given for the molecular weight range of the polyether, viz. "above 1500 to 10 000". It is true that, for the "polyether" component alone, (1) discloses a molecular weight range from 260 to 6500 (column 6, line 40), exemplified by values of 6500, 4500, 3000 and 1600. However, in view of the intended further use of the polyether component requiring a rapid cure rate, (1) recommends polyethers having a molecular weight of from 240 to only 1500 ("polyether 240-1500"); see Claim 1, column 2, lines 39 to 50, and column 7, lines 1 to 7.

It further discloses MDI compositions derived from "polyethers 240-1500" and rendered storage stable by the addition of 1 to 20% by weight of "liquid MDI" (Abstract; Claims 2 and 7; column 2, lines 51 to 58; Example IV,

column 7, lines 9 et seq.). Nowhere in (1) is there disclosed a molecular weight range exceeding 1500 for the polyether moiety of a reaction product with MDI when such reaction product is combined with "liquid MDI", i.e. with a component resembling component B according to the invention.

While the Respondents submit, in the penultimate paragraph of their letter dated 05.06.87, that the skilled person could easily complement missing features from common general knowledge, there is no support for this allegation in the preceding parts of their submission. In the Board's judgement, Claim 1 is novel.

10. It remains to be investigated whether Claim 1 involves an inventive step.
- 10.1. The Board agrees with the Opposition Division's view (paragraph bridging pages 4 and 5 of the impugned Decision) that it was "a reasonable conclusion for the skilled man to disregard the recommendations of ... (1) as to the molecular weight because these ... do not apply to ... compositions ... in the present patent" and that in the absence of "a surprising technical effect ... due to the selected molecular weight range above 1500 to 10 000" (page 5, paragraph 3, of impugned Decision) the claimed composition was obvious.
- 10.2. However, the Board is unable to find any indication in (1) which could suggest a solution to the envisaged technical problem, viz. that the inhibition of crystallisation in compositions of the type in question could be improved by employing polyethers of a higher molecular weight range, i.e. from above 1500 to 10 000. If such an improvement is credibly established, involvement of an inventive step would have to be recognised.

- 10.3. The comparative experiments submitted together with the grounds of appeal do establish that such an improvement exists. The Respondents, who would have the burden of disproving these results, have not in the Board's view succeeded to do so. With reference to the critique on page 3, penultimate paragraph, of their submission dated 05.06.87, they have not explained, even less shown by experiments from their side, that the varying NCO content rather than the different molecular weight brings about the improved inhibition of crystallisation. Nor, with reference to the paragraph bridging pages 3 and 4 of their said submission, have they shown that use of a different polyether would lead to qualitatively different results. In summary, the Respondents have not disproved the experimental results of the Appellants.
- 10.4. The Respondents have further argued (page 2, paragraphs 4 and 5, of their afore-referred submission) that, in view of problems caused by polyethers with too low a molecular weight, the skilled person would, as a matter of course, use higher-molecular weight polyethers whenever the resulting lower cure rate did not matter too much. In effect, what they appear to mean is that the use of higher-molecular weight polyethers was the only reasonable choice and the resulting improved crystallisation inhibition was but a natural consequence thereof.

In the Board's view, however, the passage of (1) referred to in the first place - column 2, lines 47 to 50 - has to be interpreted in the context of the whole paragraph; meaning - in the light of lines 40 to 43 - that polyethers with a molecular weight lower than 240 cause "gelatin problems", while those with a molecular weight above 1500 "impede the cure". There is thus no suggestion whatever of a molecular weight above 1500, let alone that such

molecular weight would appear as the only reasonable choice.

- 10.5. It follows from all the above that, in the Board's judgement, Claim 1 does involve an inventive step and is, therefore, patentable.
11. Claims 2 to 4 relate to preferred embodiments of the composition of Claim 1 and are thus likewise patentable.
12. There has been little reference to Claim 5 in the proceedings so far: The notice of opposition simply concluded that because Claim 1 as granted was not novel, the same must apply to Claim 5 (page 2, line 6); in their reply dated 20.06.85, the Patentees have in turn concluded that "Claim 1 being patentable, dependent Claim ... 5 (was) also allowable" (page 2, last paragraph, first two lines); and the impugned Decision states in item 7 that its arguments (against patentability) are applicable to the subject-matter of the independent Claims 1 and 5.

While it was correct to revoke the whole patent once Claim 1 was held not patentable, the opposite conclusion cannot necessarily be drawn from the patentability of Claim 1. Rather, the patentability of this independent Claim 5 must be investigated separately.

- 12.1. Concerning novelty, the fact that one MDI precursor of a polyurethane product is more stable against crystallisation than another, does not necessarily mean that the polyurethane products are different. When, however, such greater stability is brought about by a structural difference (greater molecular weight) of a modifying structural element (polyether) of the said precursor, it is difficult to conceive that the resulting polyurethane product should not also be structurally different from the

one in the manufacture of which a differently modified MDI precursor was used. The novelty of the polyurethane product of Claim 5 compared to a polyurethane product in which the MDI precursor was modified by a polyether of lower molecular weight - such as in the polyurethane foams of (1) - is further confirmed by the different properties of the elastomers W, X and Y, in accordance with Claim 5, as against the elastomer Z, in Table III of the patent-in-suit; for, if a chemical product cannot be defined by structural characteristics, novelty can be established if it is shown that distinct differences exist in the properties of the products (cf. Decision T 205/83, "Vinyl ester/crotonic acid copolymers/Hoechst, OJ EPO 12/1985, 363, in particular item 3.2.1). In the present circumstances, novelty of Claim 5 is acknowledged.

12.2. As to inventive step, it seems clear that the solution of the problem of desired greater stability against crystallisation, achieved by the incorporation of a polyether of higher molecular weight into component A of the compositions of Claims 1 to 4, cannot have any direct bearing on the polyurethane product obtained from the reaction of such compositions with substances containing active hydrogen atoms. However, the Appellants have also contended that the compositions of Claims 1 to 4 give polyurethane elastomers with advantageous properties (page 2, lines 24 to 25, of specification as granted). Here is certainly a connection with the subject-matter of Claim 5. The unchallenged figures of Table III of the patent-in-suit show marked differences in the properties, especially a significantly increased flexural modulus, of the polyurethanes (W, X, Y) made from the MDI compositions of Claims 1 to 4, as against a prior art polyurethane (Z) incorporating lower-molecular weight polyethers.

There is nothing in (1), as far as this Board can recognise, suggesting these differences in properties result from the use of higher-molecular weight polyethers. In the absence of any substantiated attack on the inventive step involved in the polyurethane product of Claim 5, it is the Board's view that this claim also involves an inventive step.


12.3. Hence, Claim 5 is held patentable as well.

Order

For these reasons, it is decided:

1. The impugned decision is set aside.
2. The case is remitted to the Opposition Division, with the order to maintain the patent in amended form, on the basis of
 - Claims 1 to 5 as recited on pages 1 to 2 of the impugned decision;
 - Description yet to be adapted.

The Registrar



The Chairman

