DECISION
of 2 February 2005

Case Number: T 1076/01 - 3.3.3
Application Number: 92111700.8
Publication Number: 0524500
IPC: C08G 18/02
Language of the proceedings: EN

Title of invention:
Polyisocyanates containing allophanate and isocyanurate groups, a process for their production and two-component coating compositions

Patentee:
Bayer Corporation

Opponent:
Rhodia Chimie

Headword:
-

Relevant legal provisions:
EPC Art. 84, 123(2), (3)

Keyword:
"Main request: amendments (disclaimer) - added subject-matter (yes)"
"Auxiliary request I: reformatio in peius"
"Auxiliary request II: disclosure - sufficiency (no)"
"Auxiliary request III: extension of protection conferred (yes)"
"Auxiliary request IV: amendments - added subject-matter (yes)"

Decisions cited:
G 0010/91, G 0004/92, G 0001/99, G 0001/03, T 0623/91, T 0395/00, T 0500/00

Catchword:
-
Case Number: T 1076/01 - 3.3.3

DECISION
of the Technical Board of Appeal 3.3.3
of 2 February 2005

Appellant: Rhodia Chimie
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
26 July 2001 concerning maintenance of European
patent No. 0524500 in amended form.

Composition of the Board:
Chairman: R. Young
Members: W. Sieber
H. Preglau
Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 524 500, in respect of European patent application no. 92 111 700.8, filed on 9 July 1992 and claiming a US priority of 22 July 1991 (US 733566), was published on 13 November 1996 (Bulletin 1996/46). The granted patent contained 5 claims whereby independent Claims 1 and 3 read as follows:

"1. A process for the production of a polyisocyanate mixture having an NCO content of 10 to 47% by weight and a viscosity of less than 1300 mPa.s at 25°C and containing isocyanurate and allophanate groups in a molar ratio of monoisocyanurates to monoallophanates of 10:1 to 1:5 which comprises

a) catalytically trimerizing a portion of the isocyanate groups of hexamethylene diisocyanate,

b) adding 0.001 to 0.5 moles, per mole of said organic diisocyanate, of a monoalcohol containing at least 10 carbon atoms and having a molecular weight of 158 to 2500 to said organic diisocyanate prior to or during the trimerization reaction of step a),

c) terminating the trimerization reaction at the desired degree of trimerization by adding a catalyst poison and/or by thermally deactivating the catalyst and
d) removing unreacted hexamethylene diisocyanate by distillation to a content of the polyisocyanate mixture of this diisocyanate of less than 1% by weight.

3. A polyisocyanate mixture having in [sic] NCO content of 10 to 47% by weight and a viscosity of less than 1300 mPa.s at 25°C and a content of free hexamethylene diisocyanate of less than 1% by weight and containing isocyanurate and allophanate groups in a molar ratio of monoisocyanurates to monoallophanates of 10:1 to 1:5 wherein said allophanate groups are formed from urethane groups which comprise the reaction product of hexamethylene diisocyanate and a monoalcohol containing at least 10 carbon atoms and having a molecular weight of 158 to 2500."

Claims 2 and 4 were dependent claims. Claim 5 was directed to a two-component coating composition comprising the polyisocyanate of claim 3 and a compound containing isocyanate-reactive groups.

II. A notice of opposition was filed on 11 August 1997 by Rhône-Poulenc Chimie (now Rhodia Chimie), requesting revocation of the patent in its entirety on the grounds of Article 100(a) EPC, ie lack of novelty and lack of inventive step, and on the grounds of Article 100(b) EPC, ie lack of sufficiency of disclosure. The opposition was supported – inter alia - by four experimental tests:

Essais N°1 to 4.
III. By an interlocutory decision issued in writing on 26 July 2001, the opposition division decided that the patent could be maintained in amended form according to the proprietor's sole request then on file.

(a) Amended Claim 1 of this request differed from Claim 1 as granted in that the process consisted of steps a) to d) ("consists of" instead of "comprises") and the disclaimer "except octadecanol" was introduced at the end of step b).

Claims 2 to 5 corresponded to granted Claims 2 to 5 except that the disclaimer "except octadecanol" had been added at the end of Claims 2 to 4.

(b) The opposition division held that octadecanol had to be disclaimed because the opponent had demonstrated with Essai N°1 that a polyisocyanate mixture having a viscosity of less than 1300 mPa·s could not be prepared by reacting hexamethylene diisocyanate with octadecanol (the resulting product was a solid at room temperature). The disclaimer was considered admissible in the light of T 623/91 of 16 February 1993 (not published in the OJ EPO).

IV. On 26 September 2001, the opponent (hereinafter referred to as the appellant) filed a notice of appeal against the above decision with simultaneous payment of the prescribed fee.

In the statement of grounds of appeal, filed on 23 November 2001, the appellant argued that the
substitution of "comprises" by "consists of" in Claim 1 contravened Article 123(2) EPC. Furthermore, it maintained its objections raised in the opposition procedure, in particular the objections under Articles 83, 54 and 56 EPC.

V. With letter dated 29 May 2002, the proprietor (hereinafter referred to as the respondent) disputed the objections of the appellant and requested that the appeal be dismissed.

VI. In a communication dated 27 September 2004 accompanying a summons to oral proceedings, the salient issues were identified by the board as being, firstly, the disclaimer which was not allowable according to the principles laid down in G 1/03 (OJ EPO 2004, 413), and secondly, the substitution of "comprises" by "consists of" in Claim 1 (Article 123(2) and 84 EPC). Furthermore, it was pointed out that it appeared impossible to produce a polyisocyanate mixture having a NCO content of greater than 25% by weight and a content of free hexamethylene diisocyanate (HMDI) of less than 1% by weight when HMDI was the only diisocyanate used in the process of Claim 1. This issue also highlighted a discrepancy in the definition of the isocyanurate groups in Claim 1 and 3, respectively. Thus, in the process of Claim 1, HMDI was used to prepare both the isocyanurate and the allophanate groups whereas in the polyisocyanate mixture of Claim 3 only the allophanate groups originated from HMDI. In other words, Claim 3 imposed no restriction whatsoever on the origin of the isocyanurate groups. Finally, the respondent's attention was drawn to Article 123(2) and (3) EPC and
the principle of *reformatio in peius* in case new claims would be filed.

VII. In reply, the respondent filed with letter dated 24 November 2004 amended sets of claims in the form of a main request and auxiliary requests I to IV, whereby auxiliary requests II to IV were accompanied by revised pages 2 to 9. Furthermore, the respondent gave reasons as to why it considered these requests allowable.

(a) The main request contained three claims, whereby Claim 1 read as follows:

"A polyisocyanate mixture having a NCO content of 10 to 47 percent by weight, a viscosity of less than 1300 mPas at 25°C and a content of free hexamethylene diisocyanate of less than 1% by weight and containing isocyanurate and allophanate groups in a molar ratio of monoisocyanurates to monoallophanates of 10:1 to 1:5 wherein said allophanate groups are formed from urethane groups which comprise the reaction product of hexamethylene diisocyanate and a monoalcohol comprising at least 10 carbon atoms and having a molecular weight of 158 to 2500 g/mol, with except of octadecanol.

Claims 2 and 3 corresponded to Claims 4 and 5 as granted.

(b) Auxiliary request I corresponded to the main request, except that in Claim 1 the disclaimer "with except of octadecanol" had been deleted.
(c) Auxiliary request II contained three claims whereby Claim 1 read as follows:

"A polyisocyanate mixture having a NCO content of 10 to 47 percent by weight, a viscosity of less than 1300 mPas at 25°C and a content of free hexamethylene diisocyanate of less than 1% by weight and containing isocyanurate and allophanate groups in a molar ratio of monoisocyanurates to monoallophanates of 10:1 to 1:5 wherein said allophanate groups are formed from urethane groups which comprise the reaction product of hexamethylene diisocyanate and a monoalcohol comprising at least 10 carbon atoms and having a molecular weight of 158 to 2500 g/mol, which is either a hydrocarbon monoalcohol comprising 10 to 36 carbon atoms, selected from the group consisting of decanol, tetradecanol, hexadecanol, 2,6,8-trimethylnonanol, 2-t-butylcyclohexanol, 4-cyclohexyl-1-butanol, 2,4,6-trimethyl benzyl alcohol, branched chain primary alcohols and mixtures thereof or monoalcohol containing ether groups.

Claims 2 and 3 corresponded to Claims 4 and 5 as granted.

(d) Auxiliary request III corresponded to auxiliary request II, except that in Claim 1 the range for the NCO content was amended to "≥ 10 percent".

(e) Auxiliary request IV corresponded to auxiliary request II, except that in Claim 1 the range for the NCO content was amended to "10 to 19.9 percent".
VIII. With letter dated 23 December 2004, the appellant argued that the main request of the respondent was not allowable in view of G 1/03 (supra) and that Claim 1 of auxiliary request I did not meet the requirements of Articles 56 and 83 EPC. Claim 1 of auxiliary request II contravened Article 84 EPC since the term "comprising 10 to 36 carbon atoms" was totally superfluous. The omission of the upper limit of the NCO content in Claim 1 of auxiliary request III was not allowable in view of Article 123(2) and (3) EPC since a NCO content having no upper limit was not disclosed in the application as originally filed and broadened the scope of the claim. As regards auxiliary request IV, the subject-matter of Claim 1 did not meet the requirements of Article 84 EPC (for the same reasons as Claim 1 of auxiliary request II), and it remained doubtful as to whether the subject-matter of Claim 1 met the requirements of Articles 83 and 56 EPC.

IX. With letter dated 3 January 2005, the respondent withdrew its auxiliary request for oral proceedings and requested that a decision be made according to the facts on file.

X. On 2 February 2005, oral proceedings were held before the board where the respondent was not represented. Because it had been duly summoned, however, the oral proceedings were continued in its absence in accordance with Rule 71(2) EPC.

The issues discussed at these oral proceedings related to the allowability of the respondent's respective
requests on file whereby the appellant basically relied on its written submissions.

In addition, the appellant pointed out that Claim 1 of auxiliary request I violated the principle of reformatio in peius (G 1/99, OJ EPO 2001, 381). With regard to Claim 1 of auxiliary request II, it argued that it was not possible to produce a polyisocyanate mixture having a NCO content of greater than 25% by weight and a content of free HMDI of less than 1% by weight when HMDI was used as the only diisocyanate used. The deletion of the upper limit for the NCO content in Claim 1 of auxiliary request III was not allowable in view of Article 123(2) and (3) EPC. Finally, the amendment of the upper limit of the NCO content to 19.9% by weight in Claim 1 of auxiliary request IV constituted a violation of Article 123(2) EPC because said value was taken from an example to create an arbitrary range which was not disclosed in the application as originally filed.

XI. The appellant requested that the decision under appeal be set aside and the patent be revoked in its entirety.

The respondent requested that the patent be maintained on the basis of Claims 1 to 3 filed with the letter of 24 November 2004 (main request), or, in the alternative on the basis of one of the auxiliary claim sets (all filed with letter dated 24 November 2004) with

- auxiliary request I (Claims 1 to 3);
- auxiliary request II (Claims 1 to 3);
auxiliary request III (Claims 1 to 3); and

auxiliary request IV (Claims 1 to 3).

**Reasons for the Decision**

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

2. **Claim interpretation**

2.1 Claim 1 of each request is based on granted Claim 3 and is directed to a polyisocyanate mixture containing isocyanurate and allophanate groups. It is conspicuous to the board that each Claim 1 requires that the allophanate groups originate from the reaction of hexamethylene diisocyanate (HMDI) and a specific monoalcohol whereas the claims impose no restriction whatsoever on the nature/origin of the isocyanurate groups. This contrasts with the process for preparing the polyisocyanate mixture described in the patent in suit which has at its heart that both the isocyanurate and the allophanate groups are prepared from HMDI (eg granted Claim 1, Examples). When the board drew the respondent's attention to this discrepancy in the communication accompanying the summons to oral proceedings (section VI, above), the respondent merely deleted the process claims but offered no explanation for this discrepancy.

2.2 The respondent's adherence to a product claim where the origin of the isocyanurate groups is not linked to HMDI
must lead, in the board's view, to a broad interpretation of such a product claim. Thus, such a claim covers the variant where both the isocyanurate groups and the allophanate groups are prepared from HMDI, i.e., a polyisocyanate mixture prepared according to the process described in the patent in suit, but also covers the variant where HMDI is only used for the preparation of the allophanate groups and a different diisocyanate is used to prepare the isocyanurate groups.

2.3 Hence, Claim 1 of each request covers these two variants of the polyisocyanate mixture.

3. **Main request**

3.1 Basically, Claims 1 to 3 of the main request correspond to Claims 3 to 5 on which the decision under appeal is based. Although Claim 1 of the main request has been amended slightly compared with Claim 3 of the decision under appeal (a NCO content, 47 percent, comprising at least 10 carbon atoms, 158 to 2500 g/mol, with except of octadecanol; amendments in bold) it contains the same constellation of mandatory features as Claim 3 of the decision under appeal, in particular a disclaimer directed to octadecanol (sections VII(a) and III(a) in combination with section I, above).

3.2 That disclaimer was not present in the granted claims but was introduced during the opposition procedure since the appellant (then the opponent) had demonstrated by means of an uncontested experimental test (Essai N°1) that the claimed invention lacked reproducibility when octadecanol was used as the monoalcohol.
3.3 However, according to G 1/03 (OJ EPO 2004, 413; point 2.5 of the reasons), a not originally disclosed disclaimer to a non-working embodiment is not allowable in view of Article 123(2) EPC. Although the EPO patent practice might have been different at the time when the disclaimer was introduced (in fact, the opposition division relied on T 623/91 of 16 February 1993 (not published in the OJ EPO) for justification of the disclaimer), the Enlarged Board of Appeal actually did not provide for a transitional provision in G 1/03. Consequently, the board is bound to follow the Enlarged Board’s ruling in the present case, having regard in particular to Article 16 of the Rules of Procedure of the Boards of Appeal (see also T 500/00 of 17 June 2004, not published in the OJ EPO; points 2.8.1 and 2.8.2 of the reasons).

3.4 As regards the respondent's argument that the disclaimer was merely introduced for clarity reasons, such an argument is not in line with the principles laid down in G 1/03 (supra) and, therefore, has to be disregarded.

3.5 It follows from the above that the disclaimer to the non-working embodiment is not allowable under Article 123(2) EPC. Hence, the main request has to be refused.

4. Auxiliary request I

4.1 Auxiliary request I corresponds to the main request, except that in Claim 1 the disclaimer "with except of octadecanol" has been deleted.
4.2 It is evident from section 3.3, above, that the disclaimer, introduced during the opposition proceedings, does not comply with the requirements of Article 123(2) EPC. Although the deletion of the disclaimer would overcome the objection against this inadmissible amendment, allowing such a claim would put the opponent and sole appellant in a worse situation than if it had not appealed thereby violating the principle of the prohibition of reformatio in peius. In such a situation, the proprietor/respondent must, according to G 1/99 (OJ EPO 2001, 381; point 15 of the reasons), attempt to resolve the problem by filing requests, as follows:

"- in the first place, for an amendment introducing one or more originally disclosed limiting features, which would not put the opponent/appellant in a worse situation than it was in before it appealed; or

- if such a limitation proves impossible, for an amendment introducing one or more originally disclosed features, which extends the scope of the patent as maintained, but within the limits of Article 123(3) EPC; or

- if such an amendment proves impossible, for deletion of the inadmissible amendment maintained by the Opposition Division, but within the limits of Article 123(3) EPC, even if, as a result, the situation of the opponent/appellant is made worse."
4.3 In the present case, it would have been possible, to limit, for example, the monoalcohol to one or more of the explicitly mentioned examples mentioned on page 5, lines 7 to 15 of the patent specification. Hence, a claim where the non-allowable disclaimer is merely deleted and the monoalcohol is not further restricted does not comply with the principles laid down in G 1/99 (supra). Therefore, Claim 1 of auxiliary request I is not allowable.

4.4 Furthermore, the respondent could not be taken by surprise by the fact that the claims of auxiliary request I would be examined for compliance with the principle of *reformatio in peius*, because the board had pointed out in the communication accompanying the summons to oral proceedings (section VI, above) that the question of *reformatio in peius* would arise for all newly filed claims.

4.5 In summary, Claim 1 is not allowable and, therefore, auxiliary request I has to be refused.

5. **Auxiliary request II**

5.1 **Amendments**

5.1.1 Auxiliary request II corresponds to auxiliary request I, except that in Claim 1 (section VII(c), above) the monoalcohol comprising at least 10 carbon atoms and having a molecular weight of 158 to 2500 g/mol is further limited. In addition, the monoalcohol has now to be selected from two classes, namely from a hydrocarbon monoalcohol comprising 10 to 36 carbon atoms or from a monoalcohol containing ether groups.
The former class, ie the hydrocarbon monoalcohol comprising 10 to 36 carbon atoms, is still further limited and has to be selected from the group consisting of decanol, tetradecanol, hexadecanol, 2,6,8-trimethylnonanol, 2-t-butylcyclohexanol, 4-cyclohexyl-1-butanol, 2,4,6-trimethyl benzyl alcohol and branched chain primary alcohols and mixtures thereof.

5.1.2 These limitations of the monoalcohol are clearly and unambiguously derivable from the passage on page 5, lines 7 to 13 of the patent in suit (page 9, lines 12 to 23 of the application as originally filed), and, therefore, meet the requirements of Article 123(2) EPC.

5.1.3 As regards the appellant's argument that this passage in the patent in suit does not describe one of the two classes, namely the monoalcohol containing ether groups, in combination with a molecular weight of 158 to 2500, appears to be based on a misreading of the relevant passage. In fact, the sentence on page 5, lines 7 to 8 "Preferred monoalcohols are hydrocarbon monoalcohols and monoalcohols containing ether groups" has to be read in the light of the preceding text which refers to monoalcohols in more general terms, having - inter alia - a molecular weight of 158 to 2500 (page 5, lines 5 to 6). Therefore, the appellant's argument is not convincing.

5.1.4 Neither does the amendment extend the protection conferred, so that Claim 1 of auxiliary request II meets the requirements of Article 123(3) EPC, too.
5.1.5 The amendment of Claim 1 is also clear (Article 84). The further limitation "comprising 10 to 36 carbon atoms" for the first class of monoalcohols is not, as argued by the appellant, superfluous. Although that limitation implies no further restriction on the explicitly mentioned compounds decanol, tetradecanol, hexadecanol, 2,6,8-trimethylnonanol, 2-t-butylcyclohexanol, 4-cyclohexyl-1-butanol, 2,4,6-trimethyl benzyl alcohol, it is conspicuous to the board that the first class of monoalcohols is not restricted to these compounds but also includes branched chain primary alcohols and mixtures thereof. For the latter group the restriction to 10 to 36 carbon atoms has a valuable meaning. Hence, the appellant's objection in this respect is not convincing.

5.2 Sufficiency of disclosure

5.2.1 The appellant has repeatedly argued (in fact already during the opposition proceedings) that it was impossible to produce a polyisocyanate mixture having an NCO content of 25% by weight or higher and having a content of free HMDI of less than 1% by weight when HMDI is the only diisocyanate starting material. In other words, for that variant which is presented as the heart of invention in the patent in suit, the patent specification does not teach how the terms of the claim, i.e. a NCO content over 25 and up to 47% by weight, can be fulfilled. Given that a HMDI trimer has only a NCO content of 25% by weight and that the content of free HMDI is restricted to less than 1% by weight, the appellant's objection appears to be correct and has, in fact, never been disputed by the respondent.
5.2.2 Thus, Claim 1 lacks sufficiency of disclosure (Article 83 EPC) as far as the variant is concerned which goes to the heart of the invention, ie the variant where HMDI is used as the only diisocyanate to prepare the isocyanurate and the allophanate groups.

5.3 Consequently, auxiliary request II as a whole has to be refused.

6. Auxiliary requests III

6.1 Claim 1 of auxiliary request III contains no upper limit for the NCO content but merely defines the NCO content as \( \geq 10 \) percent.

6.2 In view of the above finding that it is not possible to produce a polyisocyanate mixture having an NCO content of greater than 25% by weight when HMDI is used as the only diisocyanate (section 5.2, above), one could argue, in favour of the respondent, that the deletion of the upper limit of the NCO content would not contravene Article 123(3) EPC. However, one has to bear in mind that Claim 1 is not limited to the variant where only HMDI is used to prepare the isocyanurate and the allophanate groups but embraces the variant where the isocyanurate groups originate from a diisocyanate other than HMDI (section 2, above). Therefore, the deletion of the upper limit of the NCO content contravenes the requirements of Article 123(3) EPC, at least as far as the latter variant is concerned.

6.3 Thus, Claim 1 being not allowable, auxiliary request III has to be refused.
7. **Auxiliary requests IV**

7.1 In Claim 1 of auxiliary request IV, the upper limit of the range for the NCO content has been amended to 19.9 percent by weight.

Although Example 4 of the patent in suit (corresponding to Example 4 of the application as originally filed) explicitly discloses a NCO content of 19.9 percent by weight, Example 4 describes an embodiment where the only diisocyanate monomer used in the preparation of the mixture is HMDI, i.e., the allophanate and the isocyanurate groups originate from HMDI. Since, however, the origin of the isocyanurate groups in Claim 1 is not restricted to HMDI, Example 4 cannot support the amendment of Claim 1 of auxiliary request IV. Furthermore, there is no basis in the application as originally filed which would justify the generalization of this specific example. Consequently, the subject-matter of Claim 1 of auxiliary request VI does not meet the requirements of Article 123(2) EPC.

7.2 Finally, the board does not consider itself prevented by reasons of procedural law from refusing auxiliary request IV for non-compliance with Article 123(2) EPC, although the objection under Article 123(2) EPC was brought up for the first time during the oral proceedings which was not attended by the respondent.

7.2.1 According to G 4/92 (OJ EPO 1994, 149, Conclusion 1), "[a] decision against a party who has been duly summoned but who fails to appear at the oral proceedings may not be based on facts put forward for the first time during those oral proceedings". However,
the objection with regard to Article 123(2) EPC arises solely from a comparison of the relevant claims of auxiliary request IV with the application as originally filed, and therefore not from facts which were only introduced into the case during the oral proceedings. Moreover, in the case of amendments, the "fact" is the amendment as such whereas the objection under Article 123(2) EPC represents a new argument (eg T 395/00 of 22 April 2004, not published in the OJ EPO, point 11 of the reasons). Consequently, no conflict with the opinion of the Enlarged Board of Appeal in G 4/92 (supra) arises in the present case.

7.2.2 Furthermore, the respondent could not be taken by surprise by the fact that the claims of auxiliary request IV would be examined for compliance with Article 123(2) EPC. Since amendments of the claims filed in the course of opposition or appeal proceedings are to be fully examined as to their compatibility with the requirements of the EPC (see G 10/91, OJ EPO 1993, 420, point 19 of the reasons), the board had pointed out in the communication accompanying the summons to oral proceedings (section VI, above) that new claims would have to be examined for their compliance with Article 123(2) and (3) EPC. It was therefore to be expected that a comparison of the amended claims with the content of application as originally filed for the purpose of Article 123(2) EPC would form part of the discussion at the oral proceedings.

7.2.3 It follows from the above that the board was entitled to rely on Article 123(2) EPC as a basis for its decision to refuse auxiliary request IV in accordance with the outcome of the oral proceedings. Were it
otherwise, no decision could ever be issued at the end of an oral proceedings where a proprietor, as in the present case, files auxiliary requests just before the scheduled hearing - which it too had requested - but does not attend, thereby rendering such hearing pointless and a waste of time, as well as offending the general principle of legal certainty, i.e. the general interest of the public in the termination of legal disputes.

7.3 In summary, auxiliary request IV is refused.

8. It follows from the above that none of the requests on file could be regarded as allowable. Therefore, the board had no other option but to revoke the patent in suit.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

E. Görgmaier R. Young

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