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Datasheet for the decision of 5 December 2007

Case Number: T 0561/05 - 3.3.03

Application Number: 97925966.0

Publication Number: 0906354

IPC: C08G 18/50

Language of the proceedings: EN

Title of invention:
Process for rigid polyurethane foams

Patentee:
HUNTSMAN INTERNATIONAL LLC

Opponent:
Bayer MaterialScience AG

Headword:
-

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 54, 123(2)
RPBA Art. 10a(2)

Keyword:
"Novelty - (yes)"
"Amendments - added subject-matter - (no)"
"Ground not substantiated in Statement of Grounds of Appeal"

Decisions cited:
-

Catchword:
-

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Case Number: T 0561/05 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 5 December 2007

Appellant: (Opponent)
Bayer MaterialScience AG
Patents and Licensing
D-51368 Leverkusen (DE)

Representative:
-

Respondent: (Patent Proprietor)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office dated 18 January 2005 and posted 10 March 2005 concerning maintenance of European patent No. 0906354 in amended form.

Composition of the Board:

Chairman: R. Young
Members: M. C. Gordon
C. Brandt

Summary of Facts and Submissions

I. Mention of the grant of European Patent No. 0 906 354 in the name of Huntsman ICI Chemicals LLC, later Huntsman International LLC, in respect of European patent application No. 97925966.0, filed on 30 May 1997 as international application No. PCT/EP97/02807, published as WO 97/48748 on 24 December 1997, and claiming priority of EP 96109939.7 dated 20 June 1996, was announced on 12 July 2000 (Bulletin 2000/28) on the basis of 17 claims, independent claims 1, 11 and 12 of which read as follows:

"1. Process for preparing rigid polyurethane or urethane-modified polyisocyanurate foams comprising the step of reacting an organic polyisocyanate composition with a polyfunctional isocyanate-reactive composition in the presence of a hydrocarbon blowing agent, characterised in that the polyfunctional isocyanate-reactive composition comprises a tolylenediamine-initiated polyether polyol in an amount of between 10 and 40% by weight based on total isocyanate-reactive components and that the polyfunctional isocyanate-reactive composition does not comprise aliphatic amine initiated polyether polyols."

"11. Rigid polyurethane or urethane-modified polyisocyanurate foams prepared by the process as defined in any one of the preceding claims."

"12. Polyfunctional isocyanate-reactive composition comprising 10 to 40 % by weight of tolylenediamine-initiated polyether polyol(s) and no aliphatic amine initiated polyether polyols."

Claims 2-10 were dependent claims directed to preferred embodiments of the process of claim 1. Claims 13-17 were dependent claims directed to preferred embodiments of the composition of claim 12.

II. An opposition against the patent was filed on 12 April 2001 by Bayer AG. With a letter of 23 November 2004 the EPO was informed by the opponent that the "Arbeitsgebiet Polymers" of Bayer AG, which was concerned to a significant extent with polyurethanes was being demerged into Bayer Polymers AG, which entity had been renamed to Bayer MaterialScience AG. Extracts of the relevant supporting documentation were provided. The parties were informed of the change in name of the opponent by a communication of the EPO dated 14 December 2004.

The grounds of opposition pursuant to Art. 100(a) EPC were invoked, specifically that the subject matter of the claims was neither novel (Art. 54 EPC) nor founded on an inventive step (Art. 56 EPC).

The following documents, *inter alia* were cited in support of the opposition:

D2: WO-A-96/23017
D3: WO-A-97/35899
D4: EP-A-747 411.

Two oral proceedings were held in the course of the opposition proceedings. During the first oral proceedings (held on 11 December 2003), sets of claims according to a main and first and second auxiliary requests, all submitted with a letter of the patentee

dated 4 January 2002 were considered. The opposition division held that the claims according to the main and first auxiliary requests did not meet the requirements of Art. 54 EPC.

The second auxiliary request contained a disclaimer which, as submitted by the patentee, had no basis in the application as filed.

Since the proceedings in the decisions G 1/03 and G 2/03 were at that time still pending before the Enlarged Board of Appeal, the opposition division was unable to take a decision on the disclaimer. Nevertheless the further issues pursuant to Art. 54 and 56 EPC were discussed with respect to the second auxiliary request, disregarding the disclaimer.

III. Following publication of the decisions G 1/03 and G 2/03 (OJ EPO 2004, 413 and 448), a second oral proceedings took place on 18 January 2005 at the conclusion of which a final decision on the opposition was taken. The decision was issued in writing on 10 March 2005. The opposition division decided that the patent could be maintained in amended form on the basis of a set of 16 claims filed with a letter dated 10 November 2004, and designated "second auxiliary request".

Claim 1 of this request read as follows, the differences compared to claim 1 as granted being indicated in **bold**:

"1. Process for preparing rigid polyurethane or urethane-modified polyisocyanurate foams comprising the

step of reacting an organic polyisocyanate composition with a polyfunctional isocyanate-reactive composition in the presence of a hydrocarbon blowing agent, characterised in that the polyfunctional isocyanate-reactive composition comprises a tolylenediamine-initiated polyether polyol**, obtained by the addition of ethylene and/or propylene oxides to ortho-tolylenediamine, containing up to 25 wt% of meta-tolylenediamine, and optionally between 5 and 10 % by weight of total initiator of other co-initiators,** in an amount of between 10 and 40% by weight based on total isocyanate-reactive components and that the polyfunctional isocyanate-reactive composition does not comprise aliphatic amine initiated polyether polyols **and that the polyfunctional isocyanate-reactive composition does not contain 5 to 30 % by weight based on total isocyanate-reactive components of a propyleneglycol initiated polyether polyol of molecular weight 500 to 1500 based on 70 to 100 wt% 1,2-propylene oxide and 0 to 30 wt% ethylene oxide.**"

Claims 2-10 corresponded to claims 2 and 4-11 as granted.

Independent claim 11 read as follows, the differences, compared to the corresponding granted claim 12 being indicated in **bold**:

"**11**. Polyfunctional isocyanate-reactive composition comprising 10 to 40 % by weight**, based on total isocyanate-reactive components,** of tolylenediamine-initiated polyether polyol(s) **obtained by the addition of ethylene and/or propylene oxide to ortho-tolylenediamine, containing up to 25 wt% of meta-**

tolylenediamine, and optionally between 5 and 10% by weight of total initiator of other co-initiators, and no aliphatic amine initiated polyether polyols **and not containing 5 to 30 % by weight based on total isocyanate-reactive components of a propyleneglycol initiated polyether polyol of molecular weight 500 to 1500 based on 70 to 100 wt% 1,2-propylene oxide and 0 to 30 wt% ethylene oxide**."

Claims 12-16 corresponded to claims 13-17 as granted.

According to the decision:

(a) The patent was not entitled to the claimed priority date. The feature according to which to the content of tolylenediamine-initiated polyether polyol was in an amount of between 10 and 40 % by weight, which feature was present in claim 1 of the application as filed, claims 1 and 12 of the granted patent and the corresponding claims of the requests considered by the opposition division did not appear in the priority document (EP96109939.7). The only mention of the amount of tolylenediamine-initiated polyether polyol in the priority document disclosed that the content of this component was "preferably between 40 and 80 %, preferably about 60 % of the total aromatic polyols".

(b) The claims of the second auxiliary request were held to meet the requirements of Art. 84 and 123(2) EPC.

With regard to the expression "ortho-tolylenediamine containing up to 25 wt% meta-tolylenediamine, and optionally between 5 and 10 %

by weight of total initiator of other co-initiators" in claims 1 and 11 it was held that these claims would be read in the light of paragraphs [0010] and [0014] of the patent in suit so that the o-tolylenediamine (hereinafter "o-TDA") could be used alone, or in combination with up to 25 wt% of m-tolylenediamine (hereinafter "m-TDA") based on the isomeric mixture of o- and m-TDAs, or that a mixture of up to 25 wt% m-TDA with 75 wt% or more of o-TDA was used in combination with between 5 and 10 wt %, based on total initiators, of co-initiators. If co-initiators were present the optional feature excluded amounts of more than 10% and less than 5% by weight.

The disclaimer at the end of claim 1 delimited the claim from the disclosure of D3, claim 1, part 3. D3 was prior art pursuant to Art. 54(3) EPC. The disclaimer was held to be in line with the decisions G 1/03 and G 2/03, and hence to be admissible.

(c) With regard to novelty, the decision held that D2, which due to the invalidity of the priority claim was prior art pursuant to Art. 54(2) EPC, disclosed the production of rigid polyurethane foams. The polyol formulations employed comprised 40 to 80 wt%, based on the total polyol formulation of polyether polyols produced by reacting o-TDA with propylene oxide. The polyol formulation could moreover comprise up to 40 wt% of other NCO (i.e. isocyanate) reactive compounds, chain extenders or crosslinkers. The polyol formulations of D2 further comprised hydrocarbon blowing agents.

Thus, the 40 wt% of o-TDA started polyol based on total polyol formulation comprising isocyanate-reactive compounds and blowing agent according to D2 was more than 40 wt% of o-TDA if based only on the isocyanate-reactive compounds as specified in the patent in suit.
Accordingly 40% of o-TDA of total polyol formulation (emphasis of the decision) did not overlap with the range of between 10 and 40 % by weight based on total isocyanate reactive components in operative claims 1 and 11.
Consequently the subject matter of claims 1, 11 and 12 of the second auxiliary request was held to be novel.

(d) The subject matter of the claims of the second auxiliary request was held to be founded on an inventive step.

(e) Accordingly the opposition division held that the patent could be maintained in amended form on the basis of the second auxiliary request.

IV. A notice of appeal against this decision was filed on 4 May 2005 by the opponent, the appeal fee being paid on the same day.

V. The statement of grounds of appeal was received on 22 June 2005. An auxiliary request was made for oral proceedings.

(a) With regard to Art. 123(2) EPC the appellant submitted that in claim 1 of the set of claims of the second auxiliary request, the content of 25 wt% of m-TDA was not based on the total content of initiator, as had been originally disclosed

(published application page 2, lines 34 and 35) but instead was based on the content of o-TDA. In the original description, the content of m-TDA was however always based on the total initiator content. Only in one special case, disclosed at page 3 lines 12-14 (erroneously indicated as lines 1-5 in the statement of grounds of appeal) where the o-TDA had been reacted with propylene oxide alone was the content of m-TDA based on o-TDA.

The findings of the opposition division (see section III.(b) above) were disputed, since the subject matter of the claim was not restricted to TDA as the sole initiator. Accordingly the analysis of the opposition division had been based on a special case in which the only initiator was TDA. This analysis lost its validity in the case that initiators other than TDA were present.

(b) With regard to novelty it was submitted that D2 disclosed polyol formulations which were employed for the preparation of rigid polyurethane foams. These were prepared by reaction of a polyisocyanate with a polyfunctional isocyanate-reactive composition, whereby a hydrocarbon such as cyclopentane as blowing agent was dissolved in the polyol. The polyol of D2 was an o-TDA initiated polyol, based exclusively on propylene. No further aliphatic amines or other propylene glycol initiated polyether polyols were employed. D2 disclosed further that 40 to 80 wt% of the tertiary amino group containing polyether polyols, obtained from o-TDA with 3 mols of propylene oxide, followed by addition of a basic catalyst with

further quantities of propylene oxide was included in the polyol formulation. As the feature of operative claim 1 "up to 25 wt%" could also mean 0 wt% and further because the addition of co-initiators was only optional in the operative claim, the corresponding features were also anticipated by the disclosure of D2.
The appellant disputed the position of the patentee (put forward in the oral proceedings before the opposition division - see also section III.(c) above) that the content of 40 wt% o-TDA initiated polyol in D2 was in reality higher than the 40 wt% of D2 was related to a mixture of isocyanate reactive components and blowing agent and not related solely to the isocyanate reactive component. It was conceded that the presence of blowing agent increased the proportion of o-TDA initiated polyol when the content thereof was related to the isocyanate-reactive components. This however only applied when no water was present. D2 however disclosed that water could be present in the polyol component. Hence this proportion could be large enough to compensate for, or even be larger than, the content of blowing agent. As a consequence, the content of o-TDA initiated polyol could be 40 wt% or even less. Accordingly D2 also disclosed polyol formulations within the scope of the operative claim 1.

(c) Regarding inventive step it was submitted that should the Board come to the conclusion that the subject matter of the first claim of the second auxiliary request was not anticipated by the disclosure of D2 then the subject matter of the patent was not founded on an inventive step, with

regard to the disclosure of D2 as the closest state of the art.

VI. The patentee, now the respondent replied with a letter dated 14 December 2005. It was requested to confirm the interlocutory decision of the opposition division. The consequence of this was that the set of claims designated "second auxiliary request" in the opposition proceedings (see section III above) formed the "main request" in the appeal proceedings.

(a) With regard to Art. 123(2) EPC it was argued that according to the original description (page 2 lines 30-35) the TDA polyol was obtained by addition of alkylene oxides such as ethylene oxide and/or propylene oxide to one or more of the various isomers of TDA, preferably o-TDA containing up to 25 wt% of total initiator of m-TDA. At this point of the description the only initiators being described were isomers of o- and m-TDA. Accordingly the feature "up to 25 wt% of total initiator of m-TDA" had to be interpreted as 25 wt% of m-TDA on total TDA (o-TDA and m-TDA) initiator and thus was equivalent to o-TDA containing up to 25 wt% m-TDA.
The presence of optional other co-initiators used in the preparation of the TDA polyol was only dealt with in the following paragraph. These could be used in an amount of up to 60 wt%, preferably between 5 and 10 wt% of the total initiator (i.e. the total of TDA initiators and other co-initiators).
This interpretation was further confirmed by the paragraph on page 3 lines 12-14, stating that the

preferred TDA polyol was one being initiated solely with TDA initiators, o-TDA with up to 25 wt% m-TDA.

Since m-TDA was a by-product of the synthesis of o-TDA it also made sense to describe the amount of m-TDA in relation to the o-TDA and not taking into account the presence of non-TDA initiators.

It was also clear from the application as filed that only the co-initiators used in the preparation of the TDA polyol were relevant and not the initiators used in the preparation of other polyols present in the polyfunctional isocyanate-reactive composition.

(b) Regarding novelty, it was submitted that D2 disclosed a polyol formulation containing 40 to 80 wt% of o-TDA polyether polyol, other polyols and blowing agent. Other polyfunctional isocyanate-reactive components were present in the polyol in an amount of up to 40 wt%.

It was acknowledged that D2 mentioned that water could be employed as an additional blowing agent. The general amounts of water to be used were nowhere specified. In the examples of D2 2 wt% of water was employed. Taking these low amounts into account the minimum amount of 40 wt% TDA on polyol formulation gave an equivalent of 48.8 wt% TDA polyol based on total polyisocyanate reactive components, which was distinct from the 40 wt% value claimed in the patent in suit. It was in any case not clear whether in the case that water was employed in D2 this was to be regarded as an ingredient of the "polyol formulation". It was rather to be regarded as an additional reaction ingredient next to the polyol formulation and

polyisocyanate. According to this interpretation the minimum amount of o-TDA in the total isocyanate-reactive compound of D2 would then be 50 wt%.

VII. The Board issued on 6 August 2007 a summons to attend oral proceedings.

VIII. In a letter dated 20 September 2007 the respondent submitted a further set of claims, entitled "Third auxiliary request", and requested as an auxiliary measure to maintain the patent on the basis of this set of claims.

IX. Oral proceedings were held before the Board on 5 December 2007:

(a) With regard to Art. 123(2) EPC the appellant essentially repeated the arguments advanced in the written procedure that the specification of the amount of m-TDA on the basis of o-TDA rather than on the total initiator was a generalisation of the preferred embodiment disclosed at page 3 lines 12-14 of the application as filed (see section V.(a) above). It was further submitted that, had it been intended to relate the content of m-TDA to the content of TDA alone, this should have been explicitly stated instead of which the term "total initiator" had been used in the passage at page 2 lines 30-37. In this connection, it was submitted that the juxtaposition of the sentence at page 2 at lines 33-35 "Preferably 2,3- and/or 3,4-TDA […]is used as initiator with up to 25 wt% of **total** initiator of meta-TDA […]"

(Board's emphasis) with the following paragraph, relating to the optional use of co-initiators (page 2 lines 38-40) would, due to the use of the term "total" in both locations, lead the skilled person to understand the disclosure of the former passage in the context of the latter passage, and hence to relate the content to m-TDA to the "total" initiator as specified at page 2 lines 38-40. Otherwise, it would be impossible to comprehend the basis on which the content of co-initiator was to be calculated. It was further submitted that o-TDA and m-TDA were each available as pure isomers as well as in the form of mixtures thereof. Accordingly the skilled person would not inevitably interpret the content of m-TDA to be based on the content of o-TDA.

The respondent submitted that at page 2 lines 30-37 of the application as filed the only initiators discussed were o-TDA and m-TDA. Thus in this passage the content of m-TDA was related solely and unambiguously to the total TDA. It was only in the subsequent paragraph that optional co-initiators were discussed as a further embodiment. Regarding the question of the availability of pure m-TDA the respondent submitted that it was understood that m-TDA occurred as a byproduct of the production of o-TDA and hence that usually o-TDA would contain a proportion of m-TDA. Complete purification was rarely done on cost grounds. Regarding nomenclature it was submitted that the terms "ortho" and "vicinal", employed at page 2, line 34 of the application as filed were synonymous.

(b) With regard to novelty the appellant referred to its written arguments (see section V.(b) above). An alternative approach, also based on D2, was then advanced.

With respect to the argument of the patentee querying whether the percentages given in D2 were identical to those specified in the patent in suit (see section VI.(b) above), it was argued that according to paragraph [0023] of the patent up to 5 wt% of water as a blowing agent could be present. Water was reactive with NCO. Thus in a composition containing 5% of water the maximum amount of o-TDA which could be present would be 42.1 % (40/0.95) which overlapped with the range disclosed in D2. Further D2 focused, like the patent, on the good insulating properties of the foams and disclosed that the physical blowing agents had high solubility in the polyol compositions. There was no reason to assume that the good solubility would not be maintained at lower levels of polyol. In particular in view of the disclosure at page 3 lines 8 and 9 of D2 that for the manufacture of hard polyurethane foams "in der Regel" (as a rule) 40-80% of the polyol formulation would be employed would be understood by the skilled reader as showing that the range of 40-80% polyol given in D2 was merely exemplary but not limiting. Hence there was no reason for the skilled person to regard the lower figure as a limit, but would consider employing a still lower content of polyol.

The respondent submitted that the basis for the percentage ranges in D2 and the patent in suit were different, since the percentages in D2

related to the entire polyol including blowing agents. Claim 1 of the patent in suit however defined the amount of o-TDA with respect only to the total of NCO-reactive components. It was further disputed that water was an "isocyanate-reactive compound" as employed in the patent in suit. Water was a blowing agent. The "isocyanate-reactive compounds" were disclosed in the passage bridging pages 3 and 4 of the application as filed and did not include water. The amount of TDA according to the operative claims was based on the NCO reactive compounds alone. In contrast thereto the content of TDA in the polyol formulations of D2 was based on TDA, other polyols and on blowing agents. Thus the disclosed amount of 40-80 wt. % TDA in D2 amounted to a minimum of 50 wt. % when calculating on the basis employed in the patent in suit. Even if water was treated as an NCO reactive compound - which was disputed - the effective maximum according to the operative claims would be 42,1 wt. % of o-TDA which was far from the minimum of 50 wt. % derivable from D2.

(c) With regard to inventive step, the appellant submitted that the statement made in the statement of grounds of appeal (see section V.(c) above) was an implicit reference to the submissions made in the opposition proceedings in respect of inventive step, and further that the submissions made in the oral proceedings with respect to novelty also contained elements pertinent to inventive step. Accordingly the appellant considered that it should be permitted to make submissions on inventive step.

The respondent submitted that the statement of grounds of appeal had contained no submissions on inventive step beyond the single statement referred to above. There was no reference to the arguments from the opposition proceedings. It was not possible to understand the objection raised.

X. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent No. 906 354 be revoked.

The respondent (patentee) requested that the appeal be dismissed (main request) or, in the alternative, that the patent be maintained on the basis of the set of claims designated "third auxiliary request" filed with the letter dated 20 September 2007.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request - Art. 123(2) EPC*

As noted in sections III and VI above, the main request consists of the set of claims forming the second auxiliary request considered by the opposition division.

2.1 *The basis of the content of m-TDA*

2.2 Claim 1 of the main request specifies:
"…characterised in that the polyfunctional isocyanate-reactive composition comprises a tolylenediamine-

initiated polyether polyol, **obtained by the addition of ethylene and/or propylene oxides to ortho-tolylenediamine containing up to 25 wt% meta-tolylenedimaine**…" (Board's emphasis).

Claim 1 as originally filed did not contain the feature indicated in bold.

The discussion of the o-TDA initiated polyether polyols in the description of the application as filed commences at page 2 line 30, and continues to page 4 line 23. In the first part of this discussion (page 2 lines 33-37) it is disclosed:

"Preferably 2,3- and/or 3,4-TDA (ortho-TDA or vicinal TDA) is used as initiator with up to 25 wt% of total initiator of meta-TDA (2,4- and/or 2,6-TDA)".

The terms "ortho" and vicinal" are synonymous, as submitted by the respondent at the oral proceedings (see section IX.(a) above) which statement was not disputed by the appellant.

Thus at this stage in the development of the description the only initiators discussed are isomers of TDA. Accordingly the term "total initiator" as employed in the passage from page 2 lines 30-37 refers, taken in its contextual sequence, unambiguously to o-TDA and m-TDA alone, with the consequence that the content of m-TDA disclosed in this passage can refer only to the isomers of TDA, i.e. o-TDA and m-TDA.

Further, this subject matter is disclosed as a general case and not, as submitted by the appellant in the statement of grounds of appeal (see section V.(a) above), as a special case in which the o-TDA is reacted with propylene oxide alone.

2.3 In the following passage of the description (application page 2 lines 38-40) it is disclosed that

"Other co-initiators can be used additionally…" in amounts of up to 60 wt. %, preferably between 5 and 10 wt. % of total initiator. The use of the words "can be used" indicates that this embodiment is optional, while the term "additionally" makes clear that these optional initiators are to be used together with the initiators disclosed in the passage from lines 30-37 of page 2.

2.4 The indicated part of the description thus provides a sequence of a first embodiment and as an option a variation thereon. The first embodiment relates to an initiator composition which contains at least o-TDA and optionally up to 25 wt% of m-TDA, this combination thus constituting the "total initiator" of this embodiment. The second - optional - embodiment permits the **additional** presence of - unidentified - **co**-initiators, again in an amount expressed in terms of a proportion of the resulting "total initiator".

2.5 The appellant has argued (section IX.(a) above) that the appearance of the term "total initiator" in both of these passages would lead the skilled reader to seek to interpret the content of m-TDA as disclosed in the section from lines 30-37 of page 2 in the context of the following passage i.e. as relating to the initiator including the - optional - co-initiator.

2.6 While it is true that the term "total initiator" appears in both paragraphs under consideration, the interpretation canvassed by the appellant involves, in the Board's view, the conceptual step of reversing the contextual sequence of the two paragraphs, so that the mention in the first paragraph of "total initiator" is

extended in its ambit necessarily to include the "co-initiators" mentioned for the first time in the second following paragraph.

2.6.1 This is not considered to be a fair and correct reading of the text since it makes the subsequent reference an antecedent of the initial reference, thus contradicting the sequential presentation in the text.

2.6.2 The unusual character of this inversion is compounded by the fact that the nomenclature of the second reference ("**co**-initiators" - emphasis by the Board) is distinct from the first reference ("initiator").

2.6.3 Consequently, the subsumation of the "co-initiators" of page 2 lines 38-40 retrospectively under the "initiator" of page 2 lines 33-35 conflicts, in the Board's view, with the normal rules of interpretation.

2.6.4 The more correct reading of the text corresponds, in the Board's view to that arising from adhering to the sequence in which the text is presented. Reading the text in this manner makes clear that the feature that the content of 25 wt% of m-TDA is based on the content of o-TDA is disclosed in the application as filed, namely at page 2 lines 30-37. Accordingly this feature does not extend beyond the content of the application as filed and hence meets the requirements of Art. 123(2) EPC.

2.7 No other objections pursuant to Art. 123(2) EPC were raised by the appellants nor has the Board any objections of its own.

2.8 The subject matter of the claims of the main request therefore meets the requirements of Art. 123(2) EPC.

3. *Main request - novelty*

3.1 Novelty was challenged on the basis of the disclosure of D2.

This document relates according to claim 1 thereof to a tertiary amino group containing polyetherpolyol of defined OH number obtainable by the reaction of exclusively propylene oxide with o-TDA. Claim 3 of D2 specifies a polyol formulation ("Polyolformulierung") containing 40 to 80 wt % of the polyether polyol of claim 1 of D2. The discussion of this feature at page 3 line 9 of D2 differs from that in claim 1 of D2 in specifying that this amount of polyether polyol is present "as a rule" ("in der Regel"). According to claims 6-9 of D2 the polyol formulation of claim 3 can contain unspecified amounts of various hydrocarbons or halocarbons as blowing agents. The same teaching is found at page 4 lines 19-21. In the following passage, page 4 lines 23 and 24 it is disclosed that water can be employed as a additional ("zusätzliche") blowing agent.
According to claim 5 and page 3 lines 11 and 12 of D2 the polyol formulations can contain additionally sucrose polyether polyols of defined OH functionality. At page 3 lines 13-19 of D2 it is further taught that up to 40 wt% of other isocyanate reactive compounds can be present.

The only example of D2 relating to the preparation of formulations for polyurethane foams to contain an o-TDA

initiated polyol is Example 1. In the first part of this example the preparation of the "polyol component" is described. The composition of this "polyol component" in parts by weight is given below, the isocyanate reactive components being indicated by *italics*:

- 60 parts of an o-TDA initiated polypropylene polyether polyol according to the invention;

- 30 parts of a further polyol based on sucrose, ethylene glycol and propylene oxide;

- 10 parts of a further polyether of specified hydroxy number

- 2 parts of water

- 2 parts of a foam stabilizer

- 1.2 parts of an N, N-dimethylcyclohexylamine.

In the second part of example 1 of D2, 100 parts of the above described "polyol component" is combined with 13 parts of cyclopentane, and the resulting formulation (113 parts total) is combined with 130 parts of the isocyanate component, and a foam produced.

It can thus be calculated that the total content of isocyanate reactive components in this polyol formulation is therefore 103.2 parts by weight, of which 60 parts by weight, or 58.1 wt % is made up of the o-TDA initiated polyol.

Accordingly this example does not anticipate the subject matter of the operative claims.

3.2 Regarding the broader disclosure of D2, as noted above, the claims of the patent in suit relate the content of TDA initiated polyol to the isocyanate reactive compounds.

In contrast thereto D2 relates the content of the o-TDA initiated polyol to the total "polyol formulation" which is employed to prepare the foam. As explained above, the "polyol formulation" of D2 includes not only the polyether polyols, but also mandatorily contains a blowing agent (page 3 lines 13ff, and claims 6-9), and hence is not restricted to isocyanate reactive compounds.

Due to the mandatory presence of a blowing agent in the formulations of D2, the content of isocyanate reactive components in the polyol formulations of D2 will necessarily be below 100% of the total polyol formulation. It is to this proportion of "less than 100% of the total" that the content of o-TDA must be related in order to assess whether the composition according to the broader disclosure of D2 falls within the scope of the operative claims.

Thus:

- the minimum amount of o-TDA initiated polyetherpolyol permitted in the polyol formulation of D2 is 40 wt% of the total;
- This total includes non-isocyanate reactive components such as mandatorily the blowing agent;
- The maximum content of other isocyanate reactive compounds is 40 wt%, i.e. the same amount as the minimum amount of o-TDA initiated polyetherpolyol.

Therefore the **minimum** content of 40 wt% of o-TDA initiated polyetherpolyol **in the total formulation** will be related to a **total content of isocyanate reactive compounds** which, according to the disclosure of D2 is 80 wt% of the total polyol formulation (40+40 wt%). Accordingly based on this calculation the minimum possible amount of o-TDA initiated polyetherpolyol

based on isocyanate reactive components will be 50 wt%, which is above the maximum of 40 wt% permitted by the operative claim 1.

3.3 It is true that D2 does not place any limit on the amount of blowing agent, beyond that imposed by the minimum content of 40 wt% of the total composition of o-TDA initiated polyol. Although employing water as a blowing agent in an amount of 60 wt% of the total composition would, taking into account that water is an isocyanate reactive compound, regardless of the purpose for which it is added, mean that the content of o-TDA initiated polyol as a total of isocyanate reactive compounds would be precisely 40 wt%, such an embodiment is not encompassed by the disclosure of D2. Water is only disclosed as being an **additional** blowing agent (page 4 lines 23 and 24), and hence will mandatorily be present in an amount of less than 60 wt% of the total polyol formulation, thus forcing the content of o-TDA initiated polyetherpolyol above the level of 40 wt% based on the isocyanate reactive components.

3.4 Regarding the argument advanced at the oral proceedings relating to the possibility of the composition of the patent in suit containing up to 5 wt% of water as a blowing agent, the presence of which would extend the content of o-TDA initiated polyetherpolyol into the range covered by D2 (see section IX.(b) above), the Board observes that insofar as water is an isocyanate reactive compound it would have to be added in such amounts that the requirement that not more than 40 wt% of the total isocyanate reactive components was constituted by o-TDA initiated polyether polyols was respected. If this limit were to be exceeded then the

resulting composition would be outside the scope of the operative claims.

In any case it appears that the calculation of the appellant is defective since in a first stage water is being considered as an isocyanate reactive compound. The amount of water added is then deducted from the total of isocyanate reactive compound - resulting in a content of 95 parts, and it is to this "residue" that the content of 40 parts of o-TDA initiated polyether polyol is related. This "double counting" is however inadmissible. If water is to be considered as an isocyanate reactive component then it must be consistently treated as such, not only at the time of addition to the composition but also when the proportions of components in this composition are being calculated.

Accordingly the calculation of the appellant, and conclusions drawn on the basis thereof are faulty in this respect as well.

3.5 Two of the lines of argument advanced by the appellant in respect of novelty appear to rely on considerations that would properly belong in a discussion relating to inventive step:

3.5.1 The appellant submitted (see section IX.(b) above) that the skilled person would interpret the range of content of o-TDA initiated polyol given in D2 merely as recommendations. This argument relied in particular in view of the expression "in der Regel" at page 3 line 9 of D2 and interpretation thereof.

Such a line of argument however relies on how the skilled person would interpret and even modify the explicit teaching of the cited document rather than relating to the information that the skilled person would unambiguously, explicitly or implicitly derive therefrom. Accordingly this argument relates to issues that should properly be considered with in the context of Art. 56 EPC (inventive step), and not with respect to Art. 54 EPC (novelty).

3.5.2 Similarly the argument that the skilled person, in view of the reported good solubility of the blowing agent in the o-TDA initiated polyether polyol would consider employing lower levels of said polyether polyol (section IX.(b) above) relies to an even greater extent than that discussed in the preceding section on aspects relating to inventive step. In particular this argument relies on the alleged obviousness of making a modification to the teaching of a prior art document. As explained above, such arguments are however neither appropriate nor valid in the context of a discussion of novelty.

3.6 It is accordingly concluded that D2 does not disclose explicitly or implicitly a content of o-TDA initiated polyether polyols of 10-40 wt% based on total isocyanate reactive components.

3.7 The subject matter of claim 1 of the main request is therefore novel.

3.8 Since claims 2-16 are dependent on claim 1, the subject matter of these claims is also novel.

4. *Inventive step*

4.1 Regarding the request of the appellant to make submissions with respect to inventive step (see section IX.(c) above), the Board notes that Art. 10a(2) of the Rules of Procedure of the Boards of Appeal states (first two sentences):

"The statement of grounds of appeal and the reply shall contain a party's complete case. They shall set out clearly and concisely the reasons why it is requested that the decision under appeal be reversed, amended or upheld, and should specify expressly all the facts, arguments and evidence relied on."

4.2 In the present case no reasons were given in support of the objection pursuant to Art. 56 EPC in the statement of grounds of appeal, beyond the reference to D2 as closest state of the art. The statement of grounds of appeal failed to advance any pertinent facts or arguments with respect to the evidence provided by D2. In particular it was not explained in which way the teaching of this document was considered to render the subject matter of the operative claims obvious.
The Board also notes the requirement in Art. 10a(2) RPBA that the facts, arguments and evidence relied upon shall be specified "expressly". In view of this, even if the reference to inventive step in the statement of grounds of appeal were, as petitioned at the oral proceedings (see section IX.(c) above), to be considered to be an implicit reference to the submissions made in the opposition proceedings, due to the absence of an express reference to the elements thereof upon which it was intended to rely, it

nevertheless would have to be concluded that the requirements of Art. 10a(2) RPBA were not met.

4.3 Accordingly neither the respondent or the Board was in a position to understand or evaluate the objection that was being raised.

Accordingly the requirements of Art. 10a(2) RPBA second sentence were not met by this aspect of the statement of grounds of appeal.

4.4 Although during its submissions on novelty at the oral proceedings (see sections IX.(b) and 3.5 above) certain of the arguments would arguably have been more appropriate in the context of an attack on inventive step, this demonstrates merely deficiencies in the submissions made in respect of novelty. This however cannot compensate for the total absence of a reasoned statement on inventive step in the statement of grounds of appeal. In particular it is not foreseen in the Rules of Procedure to allow a party, based on defects in the arguments presented under one ground of opposition to seek to have these arguments considered under a different ground of opposition that is not in the appeal procedure.

4.5 Since the ground of lack of inventive step was not raised in an admissible manner in the statement of grounds of appeal it does not form part of these appeal proceedings.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

E. Görgmaier R. Young