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**Datasheet for the decision
of 11 October 2006**

Case Number: T 0148/05 - 3.3.03

Application Number: 98932104.7

Publication Number: 0990006

IPC: C08G 18/76

Language of the proceedings: EN

Title of invention:

Isocyanate compositions for blown polyurethane foams

Patentee:

HUNTSMAN INTERNATIONAL LLC

Opponent:

BASF Aktiengesellschaft

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 123(2), 123(3)

RPBA Art. 10b(3)

Keyword:

"Novelty - main request - first auxiliary request (no)"

"Inventive step - second auxiliary request (no)"

"Admissibility of requests"

"Late-filed documents"

Decisions cited:

G 0009/91, T 0020/81, T 0153/85, T 0117/86, T 0326/87,

T 0386/89, T 0955/91, T 0234/92, T 1019/92, T 0793/93,

T 0966/95, T 0577/97, T 0355/99, T 0950/00

Catchword:

-



Case Number: T 0148/05 - 3.3.03

DECISION
of the Technical Board of Appeal 3.3.03
of 11 October 2006

Appellant:
(Opponent)

BASF Aktiengesellschaft
Patente, Marken und Lizenzen
D-67056 Ludwigshafen (DE)

Representative:

Aechter, Bernd
BASF Aktiengesellschaft
Patente, Marken und Lizenzen
D-67056 Ludwigshafen (DE)

Respondent:
(Patent Proprietor)

HUNTSMAN INTERNATIONAL LLC
500 Huntsman Way
Salt Lake City, Utah 84108 (US)

Representative:

Swinnen, Anne-Marie
Intellectual Property Department
Huntsman Polyurethanes
Everslaan 45
B-3078 Everberg (BE)

Decision under appeal:

Decision of the Opposition Division of the
European Patent Office dated 27 October 2004
and posted 23 December 2004 rejecting the
opposition filed against European patent
No. 0990006 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: R. Young
Members: C. Idez
E. Dufrasne

Summary of Facts and Submissions

- I. The grant of European patent No. 0 990 006 in the name of Huntsman International LLC in respect of European patent application No. 98 932 104.7 filed on 2 June 1998 and claiming priority from the US patent applications US 50952 P and US 50906 P both filed on 13 June 1997 was announced on 30 January 2002 (Bulletin 2002/05) on the basis of 9 claims.

Claims 1 to 9 read as follows:

"1. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of a hydrofluorocarbon blowing agent characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

2. A process according to claim 1, wherein the amount of hydrofluorocarbon is equal to from 2% to 20% by weight of the composition.

3. A process according to claim 2, wherein the amount of hydrofluorocarbon is equal to from 4% to 15% by weight of the composition.

4. A process according to claim 1, wherein the hydrofluorocarbon is selected from the group consisting

of 1,1,1,3,3-pentafluoropropane (HFC-245fa); 1,1,1,3,3-pentafluorobutane (HFC 365mfc); 1,1,1,4,4,4-hexafluorobutane (HFC 356mff); 1,1-difluoroethane (HFC 152a); 1,1,1,2-tetrafluoroethane (HFC 134a) and mixtures thereof.

5. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of a hydrocarbon blowing agent characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

6. A process according to claim 5, wherein the amount of hydrocarbon is equal to from 2% to 20% by weight of the composition.

7. A process according to claim 6, wherein the amount of hydrocarbon is equal to from 4% to 15% by weight of the composition.

8. A process according to claim 5, wherein the hydrocarbon is selected from the group consisting of butane, isobutane, isopentane, n-pentane, cyclopentane, 1-pentene, n-hexane, iso-hexane, 1-hexane, n-heptane, isoheptane, and mixtures thereof.

9. A process according to claim 5, wherein the hydrocarbon is a blend of isopentane to n-pentane in a ratio of 80:20 to 99:1 parts by weight."

II. On 25 October 2002, a Notice of Opposition against the patent was filed by BASF Aktiengesellschaft.

The Opponent requested revocation of the patent in its entirety on the ground of lack of novelty and lack of inventive step (Article 100(a) EPC).

The following documents have been cited in the course of the opposition proceedings:

D1a: Document with Reference no. 4354734 dated 27.02.97, Bill of carriage to transport Lupranat M 50 from BASF Antwerpen N.V. to EMS Isoliertueren (Oldenburg);

D1b: Document with Reference no.4352849 dated 21.02.97, Bill of carriage to transport Lupranat M 20S from BASF Antwerpen N.V. to Elastogran S.A. Rubi (Barcelona);

D2: Page out of a notebook named "Registratieformulier Analysen CU/QM", marked 27.04.96 with a reference to M 20S und M50 in the second column under PROD and handwritten figures under the headings 2,4'%, 4,4'%, 3-K % and 4-K %;

D3: Technical information leaflet concerning Elastopor® VP H 230/008 dated 08/1996;

D4: Technical Information leaflet concerning Elastopor® VP H 234/006 dated 11/1996;

D5a: Invoice dated 22.01.1997 for the sale of Elastopor® VP H 234/006/0 and B223 to Metallwerke GmbH;

D5b: Confirmation of order dated 20.05.96 for the sale of Elastopor® VP H 230/008/0 and catalyst KX324 to Hoesch Siegerlandwerke GmbH;

D6: EP-A-0 551 636;

D7: EP-A-0 523 398;

D8: D.J. Williams et al. "Update on the development of HFC-245fa as a liquid HFC Blowing agent", Polyurethane 1995, September 26-29, 1995, pages 2-10;

D9: EP-A-0 351 614;

D10: EP-A-0 421 269;

D11: P. Barthelemy et al. "Latest Results in the Development of Next Generation HFC Blowing Agents" Polyurethane 1995, September 26-29, 1995 pages 26-33;

D12: US-A-5 439 947;

D13: EP-A-0 472 080;

D14: EP-A-0 535 358;

D15: DE-A-4 317 531;

D16: EP-A-0 381 986;

D17: EP-A-0 344 537;

D18: Birch et al. "Iso/n-pentane Blown Rigid Polyurethane Foam for Appliances: A Realistic and Economically Attractive Alternative to Cyclopentane." Polyurethane 1995, September 26-29, 1995, pages 448-453;

D19: Analysis results of Dow's product PAPI 580 between October 84 and June 87;

D20: Analysis results of Bayer's product Desmodur® 44 V 70 between 01.01.1995 and 31.03.1995;

D21: Document with Reference no. 4354528 dated 26.02.97; Bill of carriage to transport Lupranat® M 20S from BASF Antwerpen N.V. to Caravell Group, Loegstrup (DK);

D22: Declaration of Mr Jean Peeters dated 22.09.2003;

D23: Internal analysis "Tank-Analysen" dated 7/5/1991 line number B1/576 with remark M50;

D24: Internal analysis "Tank-Analysen" dated 28/3/1989 line number B2/521 with remark M 20S;

D25: Analysis Report GPC results sample LUP M 20S dated 9/5/96;

D26: Analysis Report GPC results sample BASF Lupranate® M 20S dated 10/27/98;

D27: Huntsman Analysis PU Competitive Products Info. Product: Lupranate® M 20S Manufacturer BASF, dated 01/21/88;

D28: Huntsman Analysis PU Competitive Products Info.
Product: Lupranate® M 20S Manufacturer BASF, dated
11/16/89;

D29: Huntsman Analysis PU Competitive Products Info.
Product: Lupranate® M 20S Manufacturer BASF ex Korea,
dated 04/28/2000;

D30: Huntsman LIMS Analysis Batch Sample Nr 73202
Lupranate® M 20S dated 08/28/1997;

D31: Huntsman LIMS Analysis Batch Sample Nr 85956
Lupranate® M 20S dated 08/24/1998;

D32: Huntsman LIMS Analysis Batch Sample Nr 49428
Lupranate® M 20S dated 10/19/1995;

D33: Declaration of Dr. Ing. W. Günther dated
02.07.2004;

D34: Report "Doppelbandprotokoll vom 30.01.1997"
addressed to the firm Günther-Tore; and

D35: Kunststoff Handbuch Vol. 7 Polyurethane, Editor
Dr. G. Oertel, 3rd Edition 1993, Pages 268-269, Chapter
6.1.2. "Polyisocyanate".

III. By a decision announced orally on 27 October 2004 and
issued in writing on 23 December 2004 the Opposition
Division rejected the opposition. According to the
decision, the grounds of opposition raised by the
Opponent did not prejudice the maintenance of the
patent as granted.

According to the decision, the Parties had no objection to the admittance of the late filed documents D12 to D32, and D35. The Opposition Division however rejected the introduction of the late filed documents D33 and D34, on the grounds that they concerned a new objection based on public prior use.

According to the decision of the Opposition Division the subject-matter of Claims 1 to 9 was novel over documents D1 to D32.

Concerning inventive step it was stated in the decision that documents D7, D8, D11, D12, D16 or D17 would represent a reasonable closest prior art for the subject-matter of Claim 1 of the opposed patent, while documents D6, D10, D13, D14 or D18 would represent a reasonable closest prior art for the subject-matter of claim 5 of the opposed patent.

In the light of this prior art the objective problem of the patent was hence seen as to provide a further process for the preparation of hydrofluorocarbon-blown or hydrocarbon-blown rigid polyurethane foam having improved structural properties such as a better dimensional stability and compressive strength while maintaining acceptable thermal properties and fire properties.

According to the decision, no hint was given in any of the above cited prior art documents, alone or in combination with each other or with any other cited document, how to come to the subject-matter of Claim 1 or to the subject-matter of Claim 5 of the opposed patent.

IV. Notice of Appeal was filed on 3 February 2005 by the Appellant (Opponent) with simultaneous payment of the prescribed fee.

With the Statement of Grounds of Appeal filed on 26 April 2005, the Appellant submitted 8 new documents referred to as D36 to D43:

D36: Technical information leaflet concerning Elastopor EXH 1122/1, dated 02/1997;

D37: Technical information leaflet concerning Elastopor® VP H 230/006, dated 08/1996;

D38: Analyses of the composition of Desmodur® 44V70 dated 13 November 1992;

D39: Declaration of Mr Udo Quade dated 25 January 2005 concerning the analyses presented in D38.

D40: Declaration of Mr Pohl dated 22 March 2005 concerning the designations "B223" and "Lupranat® M50";

D41: Technical information leaflet concerning Lupranat® M 50, published in March 1996;

D42: Technical information leaflet concerning Lupranat® M 20S, published in May 1994; and

D43: W. Esser "Chemistry and Physics of Rigid Foams for PUR Sandwich Panels", Utech' 96 Processing Workshop 1, 1996.

The arguments presented by the Appellant in the Statement of Grounds of Appeal may be summarized as follows:

(i) Concerning novelty:

(i.1) Document D3 should be interpreted as a whole, i.e. the passage "Eingangsprüfung" should be read in combination with the passage "Systembeschreibung".

(i.2) The test composition disclosed the use of Isocyanat B223 which was another denomination for Lupranat® M50 (as evidenced by documents D1a and D40). Lupranat® M50 exhibited the isomer composition mentioned in Claim 1 of the patent in suit (cf. documents D2 and D23).

(i.3) Although in the test composition the blowing agent ZM 99 was used instead of tetrafluoroethane (R134a), this test composition represented a sample of the complete polyurethane system Elastopor® VP H 230/008.

(i.4) The fact that D3 referred in the paragraph "Systembeschreibung" to MDI was not relevant, since, in the technical field of polyurethane, diphenylmethane diisocyanate and polyphenylmethane polyisocyanate (i.e. PMDI) were both designated under the term MDI.

(i.5) Thus, there was clear and convincing evidence that D3 was novelty destroying for the subject-matter of Claims 1 and 4.

(i.6) The same conclusion would be valid for document D36 which was very similar to D3 but which referred to the PUR system EXH 1122/1. Furthermore D36 clearly mentioned the use of PMDI in its paragraph "Systembeschreibung".

(i.7) Document D37 which referred to the PUR system VP H 230/006 disclosed in its paragraph "Eingangsprüfung" a process for the manufacture of rigid foams in which Polyol was reacted with Isocyanat B223 in the presence of n-pentane.

(i.8) Document D15 related to a process for manufacture of rigid polyurethane foams. In its Example 7 a polyol was reacted with Desmodur® 44V70 in presence of n-pentane.

(i.9) Desmodur® 44V70, as shown by documents D38 and D39, exhibited the oligomer composition as mentioned in Claim 5 of the patent in suit.

(i.10) Consequently, the subject-matter of Claim 5 lacked novelty over D37 and D15.

(ii) Concerning inventive step:

(ii.1) Having regard to the objection of lack of novelty in view of D3, the Appellant refrained from presenting in the Statement of Grounds arguments concerning lack of inventive step of the subject-matter of Claim 1 in view of D3.

(ii.2) Document D8 could be regarded as representing the closest state of the art or the subject-matter of Claim 1.

(ii.3) D8 differed from the claimed process only in that it used an isocyanate (Lupranat® M 20) which exhibited a content of 2-ring MDI or a ratio of 2-ring to 3-ring MDI which was outside the claimed range.

(ii.4) The Patent Proprietor had not shown that due to these distinguishing features foams with improved physical properties were obtained.

(ii.5) Consequently, the technical problem starting from D8 had to be seen in the provision of an alternative process for the manufacture of rigid polyurethane foams with good properties (dimensional stability, compression strength).

(ii.6) Lupranat® M 20S used in D8 exhibited a low viscosity (200 mPa.s at 25°C) and an average functionality of 2.7 (cf. document D42).

(ii.7) It belonged to the general knowledge (cf. D35) that the use of a MDI polyisocyanate with a higher viscosity and a higher functionality would improve the physical properties of the foams.

(ii.8) According to document D41, Lupranat® M50 exhibited a viscosity of 550 mPa.s at 25°C and an average functionality of 2.8 to 2.9.

(ii.9) It would hence have been obvious to replace Lupranat® M20S by Lupranat® M50 in the process of D8.

(ii.10) Consequently, the subject-matter of Claim 1 lacked inventive step.

(ii.11) One would come to the same conclusion in view of the combination of D8 with D43, since D43 clearly taught that PMDI with higher functionality resulted in foams having better mechanical properties e.g. compressive strength.

(ii.12) Concerning the subject-matter of Claims 2 to 3:

(ii.12.1) The subject-matter of these claims differed from D3 only in the amounts of fluorocarbon blowing agents. No effect in respect of this distinguishing feature had been shown by the Patent Proprietor.

(ii.12.2) Thus, starting from D3, the technical problem was to be seen in the provision of an alternative process for the manufacture of rigid polyurethane foams.

(ii.12.3) It was known to the skilled person that the density of the foam depended on the amount of blowing agent.

(ii.12.4) Rigid foams had usually a density of 20 to 60 g/l. This required an amount of blowing agent between 2 and 25%. Furthermore D8 and D11 disclosed the amounts of blowing agents.

(ii.12.5) Consequently, the subject-matter of Claims 2 to 3 lacked inventive step.

(ii.13) The subject-matter of Claim 4 would be obvious over D8, since that document referred to the use of HFC-245fa as blowing agent.

(ii.14) Concerning the subject-matter of Claim 5:

(ii.14.1) Having regard to the objection of lack of novelty in view of D37 and D15, the Appellant refrained to present in the Statement of Grounds arguments concerning lack of inventive step of the subject-matter of Claim 5 in view of D37 and D15.

(ii.14.2) Documents D13 and D14 disclosed all the features of Claim 5. According to the decision of the opposition Division, they could not be considered as novelty destroying since the submitted analyses of Desmodur® 44V70 only established its composition after the priority date.

(ii.14.3) Starting from D13 and D14, it would have been obvious for the skilled person looking for an alternative process to use Desmodur® 44V70 which was available before the priority date, and which had the composition set out in documents D20 and D39.

(ii.14.4) The subject-matter of Claims 6, 8, and 9 would be obvious in view of documents D13, D14, D15 and D37, while the subject-matter of Claim 7 would be obvious in view of documents D13 to D15.

V. In its letter dated 27 October 2005, the Respondent argued essentially as follows:

(i) Concerning documents D36 to D43:

(i.1) They had been filed at a very late stage.

(i.2) Filing more than half of the evidence (i.e. documents D12 to D24 and D33 to D43) late could be regarded as an abuse of the procedure.

(i.3) These newly filed documents did not seem to be any more relevant than the documents already on file and considered in the opposition procedure.

(i.4) Consequently these documents should be disregarded.

(ii) Concerning novelty:

(ii.1) D3 and D36 referred under the section "System" very generally to MDI or p-MDI.

(ii.2) The fact that the isocyanate component had been described very generally as "MDI" indicated that the polyol component could be used with any MDI.

(ii.3) Isocyanate B223 was only used in the test formulations in D3 and D36 but then in the absence of HFC 134a.

(ii.4) Even if the two sections were to be combined the fact remained that it had not been proven beyond all reasonable doubt that the B223 that was being used in the systems of D3 and D36 had a composition that fell within the range claimed in the patent in suit.

(ii.5) Thus, neither D3 nor D36 was novelty-destroying for the subject-matter of Claims 1 to 4.

(ii.6) It had not been proven beyond all reasonable doubt that the B223 that was being used in D37 had a composition that fell within the range claimed in the patent in suit.

(ii.7) D15 described in Examples 7 and 8 (see table on page 5) a formulation using Desmodur® 44V70 as polyisocyanate and n-pentane or cyclopentane as blowing agent. D15 in itself did not give further details regarding the product Desmodur® 44V70.

(ii.8) The Appellant had combined this disclosure with D38 which was an internal document of Bayer representing analysis data of Desmodur® 44V70 on 13 November 1992.

(ii.9) From D38 it was however clear that the composition of Desmodur® 44V70 varied over quite a big range and was certainly not constant. Hence it had not been established beyond any reasonable doubt that Desmodur® 44V70 used in D15 had a composition falling within the range claimed in the patent in suit.

(ii.10) Hence neither D37 nor D15 was novelty-destroying for the subject-matter of Claims 5 to 9.

(iii) Concerning inventive step:

(iii.1) The problem to be solved by the presently claimed invention was to provide a process for the formation of rigid polyurethane foams which utilised

hydrocarbons or hydrofluorocarbon blowing agents and which provided foams having excellent thermal insulation and physical properties.

(iii.2) The examples of the patent showed that the use of p-MDI according to the invention led to foams with better structural properties (dimensional stability and compressive strength), fire properties and even thermal properties than conventional p-MDI.

(iii.3) None of the prior art documents cited by the Appellant suggested that in order to improve dimensional stability, compressive strength, fire properties and thermal properties of foams blown with hydrocarbons or hydrofluorocarbons a special type of p-MDI according to the patent in suit should be used.

(iii.4) D35 and D43 did not suggest an improvement in all 4 properties as envisaged in the present invention. Furthermore D35 and D43 did not specify the range of functionality needed and they did not link it to certain ranges of difunctional and trifunctional MDI.

(iii.5) Therefore, the subject-matter of Claims 1 to 9 was based on an inventive step.

VI. With its letter dated 19 September 2006, the Appellant submitted the following document:

D44: Opinion of Mr Axel Böhme dated 11 September 2006 concerning technical information about the use of MDI for the manufacture of sandwich elements.

It also argued essentially as follows:

(i) Concerning late filed documents D36 to D43:

(i.1) Since these documents were relevant for the assessment of the patentability of the patent in suit, they should be introduced into the proceedings.

(i.2) Documents D36 to D43 should furthermore be seen as a reaction to the decision of the Opposition Division.

(ii) Concerning novelty:

(ii.1) Although formulations used for reception tests generally corresponded to the formulation used in the production process, for practical reasons due to the very low boiling point of the blowing agent R 134a (-24°C), this blowing agent had to be replaced in the formulation for reception test of D3 and D36.

(ii.2) In D37 where n-pentane (boiling point $+36,1^{\circ}\text{C}$) was used as blowing agent, it was also used in the formulation for receipt tests.

(ii.3) The skilled person would, however, use the same isocyanate in the reception test as in the production. This was also confirmed by the declaration of Mr Böhme (D44).

(ii.4) Thus, D3 and D36 destroyed the novelty of the subject-matter of Claims 1 and 4.

(ii.5) It had been shown that isocyanate B233 was the same as Lupranat® M50. Thus, D37 was novelty destroying for the subject-matter of Claims 5 to 8.

(ii.6) Concerning D38, the percentages indicated for the isomers were expressed in percent by weight. This was apparent from D39.

(ii.7) Although in D38 the content of 2-ring components varied between 31 and 42% by weight and the ratio of 2-ring components to 3-ring component varied between 0.85 and 1.3, all the measured values were within the claimed ranges. Thus, D15 was novelty destroying for the subject-matter of Claims 5 to 8. The same was true for document D13 in view of D38.

(iii) Concerning inventive step, reference was made to the arguments presented in the statement of Grounds of Appeal.

VII. With its letter dated 21 September 2006, the Respondent submitted four auxiliary requests. Independent Claims 1 and 5 of the first auxiliary request read as follows:

"1. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of a hydrofluorocarbon blowing agent and water characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal

to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

5. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of a hydrocarbon blowing agent and water characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0,2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate."

Dependent Claims 2 to 4 and 6 to 9 corresponded to Claims 2 to 4 and 6 to 9 as granted.

Claims 1 to 6 of the second auxiliary request read as follows:

1. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of water and a hydrofluorocarbon blowing agent in an amount of 2% to 20% by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

2. A process according to claim 1, wherein the amount of hydrofluorocarbon is equal to from 4% to 15% by weight of the composition.

3. A process according to claim 1, wherein the hydrofluorocarbon is selected from the group consisting of 1,1,1,3,3-pentafluoropropane (HFC-245fa); 1,1,1,3,3-pentafluorobutane (HFC 365mfc); 1,1,1,4,4,4-hexafluorobutane (HFC 356mff); 1,1-difluoroethane (HFC 152a); 1,1,1,2-tetrafluoroethane (HFC 134a) and mixtures thereof.

4. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of water and a hydrocarbon blowing agent in an amount of 4% to 15% by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

5. A process according to claim 4, wherein the hydrocarbon is selected from the group consisting of butane, isobutane, isopentane, n-pentane, cyclopentane, 1-pentene, n-hexane, iso-hexane, 1-hexene, n-heptane, isoheptane, and mixtures thereof.

6. A process according to claim 4, wherein the hydrocarbon is a blend of isopentane to n-pentane in a ratio of 80:20 to 99:1 parts by weight."

Independent Claims 1 and 4 of the third auxiliary request read as follows:

"1. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of water and a hydrofluorocarbon blowing agent in an amount of 2% to 20 % by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

4. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of water and a hydrocarbon blowing agent in an amount of 4% to 15% by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 20 to 40 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher

homologues of polyphenylene polymethylene polyisocyanate."

Dependent Claims 2 to 3 and 5 to 6 corresponded to Claims 2 to 3 and 5 to 6 of the second auxiliary request.

Independent Claims 1 and 4 of the fourth auxiliary request read as follows:

"1. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of water and a hydrofluorocarbon blowing agent in an amount of 2% to 20 % by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

4. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of water and a hydrocarbon blowing agent in an amount of 4% to 15% by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 24 to 38 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a)

to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate."

Dependent Claims 2 to 3 and 5 to 6 corresponded to Claims 2 to 3 and 5 to 6 of the second auxiliary request.

The Respondent also argued essentially as follows:

(i) Auxiliary requests 1 to 4 had been filed as a response to the novelty objections raised by the Appellant in view of documents D3, D36, D37 and D15.

(ii) It was further considered that the Appellant did not contest the decision of the Opposition Division regarding the other documents used by the Appellant before the first instance in support of its objection of lack of novelty.

VIII. Oral proceedings were held before the Board on 11 October 2006.

(a) At the oral proceedings the discussion firstly focussed (i) on the question of the admission of the late filed documents D36 to D44 into the proceedings, and (ii) on the question of the remittal of the case to the first instance in case of their admission into the proceedings.

The arguments presented by the Parties concerning these points may be summarized as follows:

(a.1) Concerning point (i)

(a.1.1) By the Appellant:

(a.1.1.1) Documents D36 to D43 were very relevant and had been filed to reinforce the line of argument of the Appellant in reaction to the reasons given in the decision of the Opposition Division for rejecting the objections of lack of novelty and lack of inventive step. In that respect, they had been submitted with the Statement of Grounds of Appeal.

(a.1.1.2) In particular document D36 differed from document D3 in that it indicated that the polyisocyanate was a PMDI. Document D37 differed from document D4 in that it disclosed a composition for the reception test which also comprised the hydrocarbon blowing agent (n-pentane). Document D38 disclosed the composition of Desmodur® 44V70 and was closer to the priority date of documents D13 and D15 than previous document D20. Document D39 confirmed the validity of the analytical values disclosed in D38. D40 supported document D1a concerning the similarity between isocyanate B223 and Lupranat® M50.

(a.1.1.3) Documents D41, D42 and D43 strengthened the arguments of lack of inventive step presented in respect of document D35, since D41 and D42 showed the difference in viscosity and functionality between Lupranat® M50 and Lupranat® M20S, and since D43 disclosed the influence of these parameters on the mechanical properties of rigid polyurethane foams.

(a.1.1.4) Document D44 was also relevant since it presented the opinion of an expert in the technical

field of urethane foams concerning the interpretation of documents D3 and D36. The lateness of the filing of D44 was to be explained by the difficulty of finding an expert.

(a.1.2) By the Respondent:

(a.1.2.1) The late filing of documents D36 to D43 could not be considered as being justified by a reaction to the decision of the Opposition Division.

(a.1.2.2) The Appellant had been made aware by the communication dated 19 April 2004 of the Opposition Division, in which the Opposition Division had indicated its preliminary opinion concerning the objections of lack of novelty in particular in view of documents D3 and D15.

(a.1.2.3) Consequently, the Appellant could have submitted the documents D36 to D39 before the oral proceedings in front of the Opposition Division.

(a.1.2.4) Furthermore, documents D36, D37, D40, D41 and D42 were documents of the Appellant itself, so that there should have been no difficulty for the Appellant to submit these documents in time.

(a.1.2.5) In any case these documents were not more relevant than the documents already on file. In particular the reference to the functionality in documents D41 to D43 was not pertinent, since the functionality of the isocyanate component was not a feature of the claims of the patent in suit.

(a.1.2.6) Document D44 had been received only few days before the oral proceedings before the Board. There was no justification for filing this document about 2 years after the issue of the decision of the Opposition Division.

(a.2) Concerning point (ii):

(a.2.1) By the Appellant:

(a.2.1.1) Documents D36 to D44 only reinforced the line of arguments presented by the Appellant before the Opposition Division.

(a.2.1.2) These documents were interrelated to those already in the proceedings and did not deal with new aspects. They did not hence change the case in a way that would justify the remittal to the first instance.

(a.2.2) By the Respondent:

(a.2.2.1) Even if a formal request for remittal had not been presented in the written phase of the appeal, in the case where late filed documents would be admitted into the proceedings, this was in the opinion of the Respondent, implicit in view of the established case law.

(a.2.2.2) The Respondent would be deprived of two instances, if the Board decided on the basis of late filed documents which had not been considered by the Opposition Division.

(b) The Board having informed the Parties that documents D36 to D44 were introduced into the proceedings, and that it was not prepared to remit the case to the first instance on the basis of the subject-matter of the proceedings thus far including documents D36 to D44, the discussion moved to the question of assessment of novelty of the subject-matter of the granted claims.

While essentially relying on the arguments presented in the written phase the appeal, the Parties made additional submissions which may be summarized as follows:

(b.1) By the Respondent:

(b.1.1) The composition of B223 had only been disclosed in D2 and D23, which were internal documents of the Appellant.

(b.1.2) The compositions of Desmodur® 44V70 had only been disclosed in documents D20 and D38 which were internal documents of Bayer.

(b.1.3) The Respondent had no possibility to verify their validity. This implied that the standard of proof should be set at a very high degree, i.e. beyond any reasonable doubt.

(b.1.4) The analyses conducted by the Patent Proprietor on Lupranat® M20S showed that this product did not remain constant over the years. There was hence doubts as to whether the product Lupranat® M50 (i.e. B223) had remained the same. Reference was made to the decision T 950/00 of 18 February 2003 (not published in OJ EPO)

in that respect. Consequently neither D3 nor D36 could be considered as novelty destroying for the subject-matter of granted Claim 1. The same would apply for document D37 in respect of the subject-matter of Claim 5.

(b.1.5) In document D38, 81 analyses of Desmodur® 44V70 were presented. It was however not clear whether these analyses had been carried on the same day, whether the samples had been collected on the same day or over a longer period of time, and whether they had been taken at different times during the production of one lot of Desmodur® 44V70 or whether they had been taken from different lots of Desmodur® 44V70.

(b.1.6) In any case, the values indicated for the 2-ring oligomer content showed a very big variation, i.e. up to 30%.

(b.1.7) Consequently, there were doubts as to whether Desmodur® 44V70 used in the relevant examples of D13 and D15 met the requirements in terms of content of 2-ring and 3-ring oligomers set out in granted Claim 5. These documents could not hence be considered as novelty destroying for the subject-matter of Claim 5.

(b.2) By the Appellant:

(b.2.1) It was clear to the skilled person that the isocyanate B223 was the isocyanate used in the polyurethane systems disclosed in D3 and D36, even if the commercial reference of the isocyanate was not indicated on the first pages of D3 and D36 presenting

the respective polyurethane systems consisting of 5 elements.

(b.2.2) In the frame of the delivery of the polyurethane systems according to D3 and D36 to the client, it was not only the polyol component but the system which must be tested at the reception. It was only for practical reasons that the blowing agent R134a was not incorporated in the reception test formulation.

(b.2.3) The product isocyanate B 223 was identical to Lupranat® M50 as shown by D40 and D1a.

(b.2.4) The Respondent had contested for the first time at the oral proceedings before the Board the compositions of Lupranat® M50 as indicated in documents D2 and D23.

(b.2.5) It had been certified by the declaration of Mr Peeters (cf. D22) that the % values indicated for the amounts of 2-ring and 3-ring oligomers in D2 and D23 were weight percent.

(b.2.6) It would have been possible to hear Mr Peeters as witness in respect of D2 and D23.

(c) The Board, after deliberation, having informed the Parties that the subject-matter of the main request was considered as lacking novelty, the discussion then focussed on the question of the admissibility of the first auxiliary request submitted with letter dated 21 September 2006 of the Respondent. The arguments presented by the Parties in that respect may be summarized as follows:

(c.1) By the Respondent:

(c.1.1) The subject-matter of Claims 1 and 5 of this request differed from Claims 1 and 5 of the main request in that the presence of water had been included in these claims.

(c.1.2) This amendment was supported by paragraph [32] of the description.

(c.1.3) The filing of this auxiliary request had to be seen as a response to the late filing of documents, in particular D36, D37, by the Appellant.

(c.1.4) During the opposition proceedings auxiliary requests in which the presence of water had been included in the claims had already be submitted (cf. Claim 5 of the first auxiliary request and Claim 1 of the fifth auxiliary request submitted with letter dated 26 August 2004). Consequently, the Appellant could have expected such amendment.

(c.1.5) Furthermore, this amendment did not raise issues which could not be dealt at the present oral proceedings.

(c.2) By the Appellant:

(c.2.1) This auxiliary request had been filed at a very late stage (only 3 weeks before the oral proceedings) and furthermore it had been received just before the oral proceedings by the Appellant with the communication dated 26 September 2006 of the EPO.

(c.2.2) The incorporation of the presence of water as additional blowing agent represented an important change of case. The presence of water was not a feature of the granted claims.

(c.2.3) Further investigations would have been needed for the Appellant, in order to find relevant document in that respect.

(c.2.4) Consequently, this request should not be admitted into the proceedings.

(d) The Board after deliberation having informed the Parties that the first auxiliary request submitted with letter dated 21 September 2006 would not be admitted into the proceedings, the Respondent submitted new first, second and third auxiliary requests, which replaced the second, third and fourth auxiliary requests submitted with letter dated 21 September 2006.

Independent Claims 1 and 4 of the new first auxiliary read as follows:

"1. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of a hydrofluorocarbon blowing agent in an amount of 2% to 20% by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a)

to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

4. A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of a hydrocarbon blowing agent in an amount of 4% to 15% by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate."

Independent Claim 1 of the new second and third auxiliary requests were the same as Claim 1 of the new first auxiliary request.

Independent Claim 4 of the new second auxiliary request read as follows:

"A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of a hydrocarbon blowing agent in an amount of 4% to 15% by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 20 to 40 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate

in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate."

Independent Claim 4 of the new third auxiliary request read as follows:

"A process for preparing a rigid polyurethane foam, said process comprising reacting a polyisocyanate composition with an isocyanate reactive composition in the presence of a hydrocarbon blowing agent in an amount of 4% to 15% by weight of the entire reaction system characterised in that the polyisocyanate composition comprises (a) from 24 to 38 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate."

Dependent Claims 2 to 3 and 5 to 6 of all new auxiliary requests submitted at the oral proceedings corresponded to Claims 2 to 3 and 5 to 6 of the second auxiliary request submitted with letter dated 21 September 2006.

The Appellant having indicated that it had no objection to the admission of the new first auxiliary request submitted at the oral proceedings, the discussion focussed then on the novelty of the subject-matter of that request.

In that respect, while the Appellant submitted that the subject-matter of Claim 4 thereof was not novel over document D15, the Respondent referred to its previous

argumentation in view of the composition of the product Desmodur® 44V70.

(e) The discussion then moved to the question of the admissibility of the second auxiliary request. The arguments presented by the Parties in that respect may be summarized as follows:

(e.1) By the Respondent:

(e.1.1) The amendment in Claim 4 concerning the amount of diphenylmethane diisocyanate was disclosed in paragraph [0015] of the patent in suit.

(e.1.2) This amendment had been rendered necessary in view of the late filed documents D36, D37 and D38.

(e.2) By the Appellant:

(e.2.1) The additional feature in Claim 4 concerning the amount of diphenylmethane diisocyanate had been taken from the description and the Appellant was not in a position to respond to this point.

(e.2.2) Consequently, this request should not be admitted.

(f) The Board having informed the Parties that the new second auxiliary request would be admitted into the proceedings, the discussion moved on the assessment of novelty and inventive step of the subject-matter of this request.

The arguments presented by the parties in these respects may be summarized as follows:

(f.1) By the Appellant:

(f.1.1) Document D15 would be novelty destroying for the subject-matter of Claim 4, since the amount of blowing agent in its Example 7 was in the claimed range over 4 % by weight and since the composition of Desmodur® 44V70 met the requirements set out in Claim 4 in terms of 2-ring and 3-ring oligomers.

(f.1.2) The subject-matter of Claim 1 differed from D3 or D36 only in that a greater amount of blowing agent should be used in the polyurethane composition.

(f.1.3) Starting from D3 or D36 the technical problem should have been seen in the provision of rigid polyurethane foams of lower density.

(f.1.4) In view of document D8, it would have been obvious to solve this problem by increasing the amount of blowing agent.

(f.2) By the Respondent:

(f.2.1) Document D38 showed that the amount of 2-ring components in Desmodur® 44V70 could be outside the range defined in Claim 4.

(f.2.2) Consequently, the subject-matter of Claim 4 was novel over document D15.

(f.2.3) Document D3 and D36 should be considered as having been accidental novelty destroying documents for the subject-matter of Claim 1 as granted.

(f.2.4) They were not concerned with the problems of improvement of dimensional stability, compression resistance and thermal insulating properties.

(f.2.5) They could not hence suggest to use a polyisocyanate component having the specific composition according to the patent in suit.

(g) Concerning the third auxiliary request while it was submitted by the Appellant that Claim 1 of this request was the same as Claim 1 of the second auxiliary request, and that therefore, the same conclusions would apply in respect of the objection of lack of inventive step, the Respondent indicated that it did not intend to file further auxiliary requests.

IX. The Appellant requested that the decision under appeal be set aside and the European patent No. 0 990 006 be revoked.

The Respondent requested that the appeal be dismissed, or in the alternative that the decision under appeal be set aside and the patent be maintained on the basis of the first auxiliary request filed with letter dated 21 September 2006 or of one of the first to third auxiliary requests filed at the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.
2. *Procedural matters*

As can be seen from Section VIII above, the Board at the oral proceedings has been confronted at the beginning of the oral proceedings of 11 October 2006 with the following procedural issues:

(i) the question of the admission of documents D36 to D44 into the proceedings and

(ii) the question of remittal to the first instance in view of the admission of late filed documents into the proceedings.

2.1 Concerning point (i):

- (a) As stated in decision T 117/86 (OJ EPO 1989, 401) facts and evidence in support of an opposition which are presented after the nine-month period has expired are out of time and late, and may or may not be admitted into the proceedings as a matter of discretion under Article 114(2) EPC.
- (b) Since the grant of the European Patent EP 0 990 006 was announced on the 30 January 2002, the nine-month period ended on the 30 October 2002.
- (c) As indicated above in paragraph V, documents D36 to D43 were submitted by the Appellant with the Statement of Grounds of Appeal, i.e. on 26 April

2005, and document D44 was submitted with letter dated 19 September 2006.

- (d) It thus follows that documents D36 to D44 must be regarded as late filed.

- (e) Although it is the established case law of the boards of appeal, that the main criterion for deciding on the admissibility of a late filed document is its relevance, i.e. its evidential weight in relation to other documents already in the case, further considerations which can play a decisive role in the question of admittance of late filed evidence are the degree of lateness and whether the late filing can be seen as representing an abuse of the proceedings (cf. T 1019/92 of 9 June 1994; not published in OJ EPO, Reasons, point 2.2)

- (f) In the present case, the issue of admissibility of documents D36 to D43 into the proceedings, hence, boils down to the following questions:
 - (f.1) as to whether the late filing of documents D36 to D44 by the Appellant is to be seen as representing an abuse of proceedings,

and, if question (i) is negatively answered,

 - (f.2) as to whether the relevance of documents D36 to D44 is *prima facie* such to justify their introduction into the proceedings.

- (g) In the present case, the Opposition Division has, in substance, considered in its decision that document D3 could not challenge the novelty of the subject-matter of granted Claim 1, and that documents D13 and D15 could not be considered as novelty destroying for the subject-matter of Claim 5. According to the decision, D3, on the one hand referred to the use of MDI in its paragraph "Systembeschreibung", which term normally meant, in the Opposition Division's view, a mixture of 2-ring oligomers without 3-ring oligomers, and, on the other hand, it did not disclose that isocyanate B223 used in the test formulation was mandatorily used together with the blowing agent R 134a (Reasons point 5.2). Concerning documents D13 and D15, it was held that there was no evidence about the composition of Desmodur® 44V70 at the priority date or filing date of D13 and D15, since document D20 only disclosed analysis results of that product between 1st and 31st January 1995. Concerning inventive step, it was in particular considered in the decision under appeal that there was no indication in the cited documents on the influence of the dimer amount and dimer/trimer ratio on the mechanical properties of the rigid polyurethane foam such as dimensional stability and compressive strength.
- (h) According to the Appellant the filing of the documents D36 to D44 should hence be seen as a reaction to the decision of the Opposition Division in order to improve its position with respect to the issues of novelty and inventive step.

- (i) In that respect, the Board notes that document D36 which is very similar to D3 uses, in contrast to D3, the term "polymeres Diphenylmethandiisocyanat (PMDI)" in its Section "Systembeschreibung", that document D37 discloses a test formulation in which the same blowing agent as mentioned in its Section "Systembeschreibung" is used in combination with Isocyanat B223, and that documents D38 and D39 related to the composition of Desmodur® 44V70 before the priority date of D15. The Board also notes that document D43 appears to make a link between the functionality, the viscosity of the polyisocyanate component and the mechanical properties of the rigid polyurethane foams obtained therefrom, and that documents D40, D41, and D42 seem to establish a difference in functionality and viscosity between the polyisocyanate M20S (D42) and the polyisocyanate M50 or B223 (D40 and D41).
- (j) According to the Board, it is justified that a party which has lost in the opposition proceedings tries during the appeal proceedings to fill a presumed missing link in order to improve its position with respect to the issues of novelty and/or inventive step.
- (k) Since furthermore documents D36 to D43 have been filed at the earliest possible moment in the appeal proceedings, namely with the Statement of Grounds of Appeal, their filing in the appeal proceedings is, in the Board's opinion, legitimate and does not represent unfair behaviour and cannot

therefore be considered as amounting to an abuse of procedure.

- (1) This conclusion could not in the Board's view be altered by the arguments of the Respondent, that the Opponent had already been made aware by the communication issued by the Opposition Division on 19 April 2004 in an annex to the summons to oral proceedings scheduled to take place on 27 October 2004, that the test formulation in D3 did not contain a blowing agent, and that document D20 could not provide evidence of the composition of Desmodur® 44V70 used in the documents D13 and D15 for the following reasons:

- (i) The Board firstly observes that D38 and D39 are documents originating from a third party (Bayer AG), and it is hence questionable whether they could have been obtained by the Opponent (Appellant) before the final date for filing written submissions before the oral proceedings set out (i.e. 27 August 2004) by the Opposition Division in its communication.
- (ii) In any case, there is, in the Board's view, no suggestion, even if documents D36, D37, D40, D41, and D42 originate from the Appellant itself, that there was a deliberate decision of the Appellant for tactical reasons not to cite documents D36 to D43 at that time (cf. T 1019/92; point 2.2 of the Reasons, cited in Catchword II).

- (iii) Thus, the Board can only consider that the Appellant did not realize, through inadvertence, at that time the possible consequences of not taking into consideration the statements made by the Opposition Division in its communication annexed to the summons to oral proceedings on the issue of the opposition procedure before the Opposition Division, and that it thus decided not to carry out an additional search at that time.
- (iv) It thus follows that the filing of the documents D36 to D43 by the Appellant with its Statements of Grounds of Appeal, is to be seen, in the Board's view, as an attempt to smooth out, as quickly as possible, its previous inadvertence, but in no case as representing an abuse of proceedings.
- (m) Document D44 can also be seen as reaction to the decision of the Opposition Division, since it is presented as reflecting the manner according to which a person skilled in the art of making rigid polyurethane foams would interpret the technical leaflets D3 and D36, in particular, in view of the respective Sections "Systembeschreibung" and "Eingangsprüfung" in these documents.
- (n) While it is true that document D44 has been filed only three weeks before the Oral Proceedings before the Board, it is, in the Board's view, not unthinkable, that there were some difficulties of obtaining an opinion of an independent expert in

the field of rigid polyurethane foams concerning the interpretation of documents D3 and D36, which hence render plausible its belated submission (cf. T 326/87; OJ EPO 1992, 522; Reasons point 5). Consequently, the filing of D44 cannot amount to an abuse of procedure.

- (o) It thus follows from the above that question (f1) above must be answered negatively.
- (p) Since it is, in the Board's view, *prima facie* evident (cf. paragraphs (i) and (m) above) that documents D36 to D44 are likely to improve the position of the Appellant with respect to the issues of novelty and/or inventive step, and hence to challenge the reasons for which the Opposition Division decided to reject the objections of lack of novelty and lack of inventive step raised by the Opponent (Appellant), question (f2) is to be answered positively.
- (q) Consequently, the Board decides to introduce documents D36 to D44 into the proceedings.

2.2 Concerning point (ii):

- (a) As indicated above in Section VIII, the Respondent took the view that the case should be remitted to the first instance since the late filed documents D36 to D44 were introduced into the proceedings. Although no formal request in that respect had been submitted by the Respondent during the written phase of the appeal, the Respondent was of the opinion, on the one hand that such a request

derived implicitly from its request to disregard the documents D36 to D43 presented in its letter dated 27 October 2005 and reiterated in its letter dated 21 September 2006, and, on the other hand, that it was established jurisprudence of the boards of appeal to remit the case to the first instance when documents were introduced into the proceedings at a very late stage in order to preserve the right of a party to have its case examined by two instances.

- (b) In the Board's view, remittal due to the admission of new documents should rather be an exception i.e. if, without remittal, a party would not have had sufficient opportunity to defend itself against an attack based on the new documents, or if the factual framework has changed to such an extent that the case is no longer comparable with the one decided by the first instance (cf. also decision T 966/95 of 24 March 1999; not published in OJ EPO, Reasons point 2.2).
- (c) In that context, it is clear, in the Board's view, that documents D36 to D44 (cf. paragraph 2.1 (i) above) only reinforce the lines of attack already made by the Appellant before the first instance, so that it cannot be considered that the factual framework has changed to such an extent that the case is no longer comparable with the one decided by the first instance.
- (d) The Board further observes that documents D36 to D43 have been cited at the very beginning of the appeal procedure, that document D44 is in line

with the arguments developed by the Appellant in paragraph III 1.1 of the Statement of Grounds of Appeal, and that the Respondent has not only commented the documents D36 to D43 in its letter dated 28 October 2005 but that it had submitted 4 auxiliary requests with its letter dated 21 September 2006 in order to take into account the objections raised by the Appellant in view of these documents.

(e) Consequently, the Board can only come to the conclusion that the Respondent has had sufficient opportunity to defend itself against the attack based on the new documents, which it did until the oral proceedings without requesting remittal of the case to the first instance.

(f) Since no surprising disadvantage for the Respondent arose from the introduction of documents D36 to D44, there is no reason for the Board to remit the case back to the first instance. Hence, the Board considers it appropriate to make use of its discretionary powers under Article 111(1) EPC and to exercise any power within the competence of the department which was responsible for the decision appealed.

Main request (Claims 1 to 9 as granted)

3. Lack of novelty of the subject-matter of Claim 1 of the main request had been alleged by the Appellant in view of documents D3 and D36. The Appellant has also submitted that documents D37 and D15 were novelty destroying for the subject-matter of Claim 5.

3.1 Document D3 is a technical leaflet referring to the CFC-free polyurethane system Elastopor® VP H 230/008 for the manufacture of rigid polyurethane foams and dated 08/1996 (i.e. August 1996).

3.2 In its Section "Systembeschreibung" D3 discloses that the polyurethane system Elastopor® VP H 230/008 is delivered in form of five components which are:

for the polyol component (A-component)

(i) Elastopor® VP H 230/008/0 (polyol mixture without activator but with flame retardant);

(ii) Aktivator KX 315;

(iii) Zusatzmittel ZM 99; and

(iv) Treibmittel R 134a and

for the Isocyanat component (B-component)

(v) MDI (Diphenylmethanediisocyanat).

According to D3 (page 2, last paragraph) the isocyanate component exhibits, at 20°C, a density of 1.24g/cm³ and a viscosity of 850 mPas.

3.3 In its Section "Eingangsprüfung" D3 discloses a formulation for the reception test of the delivered system. This composition consists of:

100,0 parts by weight of Elastopor® VP H 230/008/0;

2,1 parts by weight of KX 315;

3.5 parts by weight of ZM 99, and

133,0 parts by weight of Isocyanat B223 and defines the foaming characteristics which should be met by this composition (cf. paragraph "Schäumverhalten").

3.4 In this connection, the Board notes that Claim 1 of the main request requires, explicitly,

(i) that the polyisocyanate composition be reacted with an isocyanate reactive composition in the presence of a hydrofluorocarbon blowing agent;

(ii) and that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

3.5 According to the decision T 355/99 of 30 July 2002 (not published in OJ EPO), it is not sufficient for a finding of lack of novelty that the claimed features could have been derived from a prior art document, there must have been a clear and unmistakable teaching of the claimed features (Reasons, point 2.2.4).

3.6 It should hence be checked whether there is in D3 a clear and unmistakable teaching of the combination of features (i) and (ii) mentioned above in paragraph 3.4.

3.7 While it is immediately evident that the use of the polyurethane system Elastopor® VP H 230/008 implies the reaction of the polyol component (A-component) comprising the blowing agent R 134a (i.e. tetrafluoroethane, in other words a hydrofluorocarbon blowing agent) with an isocyanate component (B-component), it is true, as argued by the Respondent, that D3 in the Section "Systembeschreibung" only refers

to the use of diphenylmethane diisocyanate (MDI) as B-component without, however, specifying the composition of the isocyanate.

3.8 It is further true, that the formulation for the reception test which specifies the isocyanate component (B223) used, does not comprise the blowing agent R134a and that document D3 fails to explicitly disclose the composition of the isocyanate B223.

3.9 Consequently, the question of lack of novelty of the subject-matter of Claim 1 over D3 boils down to the questions:

(a) as to whether the skilled person would consider that the isocyanate B223 used in the formulation for the reception test is the isocyanate component used in the system Elastopor® VP H 230/008;

and if the question (a) is answered positively, whether (b) the composition of the isocyanate B223 meets the requirements set out in Claim 1 for the isocyanate component.

3.9.1 While document D3 in its Section "Systembeschreibung" explicitly identifies with commercial references, in contrast to the isocyanate component, the four elements of the A-component, this does not imply, in the Board's view, that any MDI could be used in the system Elastopor® VP H 230/008. In the Board's view, the need for a specific identification of the four elements of the A-component should be seen in the fact that these components must be mixed in the A-component before the reaction with the B-component, while the isocyanate

component is used as delivered (in red barrel in contrast to the blue barrels used for the polyol components). In any case, it is clear from the description of the system Elastopor® VP H 230/008 that this system is delivered as whole, and that therefore it consists of five interrelated specific components. This view is further supported by the fact that document D3 indicates the characteristics of the MDI component in terms of density and viscosity, which further underlines the specificity of the isocyanate used as B-component in the system Elastopor® VP H 230/008.

- 3.9.2 Consequently, the Board comes to the intermediate conclusion that the isocyanate component to be used in the system Elastopor® VP H 230/008 is specific to that system.
- 3.9.3 Since, as indicated above, the system is delivered as a whole to the client, it thus follows that the aim of the reception test ("Eingangsprüfung") must hence be seen in the verification that the delivered system meets the requirements in terms of foaming properties set out in this test. While the necessity to carry out the reception test with the delivered components of the system finds further its justification in view of the legal implications in terms of responsibility of the seller of the system Elastopor® VP H 230/008 towards the buyer of this polyurethane system (cf. also D44, page 2, fourth paragraph), it is however conceivable that, for technical reasons due to the very low boiling point of the blowing agent R134a (-26,5°C), the formulation for the reception test could not use the

blowing agent specified in the system Elastopor® VP H 230/008.

- 3.9.4 It follows from the above considerations that the formulation used for the reception test must be regarded as consisting of four of the five elements of the delivered system. This has for its consequence that the isocyanate B223 used in this formulation is inevitably the isocyanate used in the system Elastopor® VP H 230/008.
- 3.9.5 It remains hence to be examined whether the composition of the isocyanate B223 meets the requirements set out in Claim 1 for the isocyanate composition.
- 3.9.6 In that respect, according to decision T 793/93 of 27 September 1995 (not published in OJ EPO), "concerning the issue of novelty, Article 54(2) EPC defines a state of the art as comprising "everything made available to the public by means of written or oral description, by use or in any other way. The term "available" clearly goes beyond literal or diagrammatical description, and implies a communication, express or implicit, of technical information by other means as well. In the case where a prior art document fails explicitly to disclose something falling within a claim, availability in the sense of Article 54 EPC may still be established if the inevitable outcome of what is literally or explicitly disclosed falls within the ambit of that claim" (Reasons 2.1). As further stated in decision T 793/93 "in deciding what is or is not the inevitable outcome of an express literal disclosure in a particular prior art document, a standard of proof much stricter than the balance of probability, to wit

"beyond all reasonable doubt", needs to be applied. It follows that if any reasonable doubt exists as to what might or might not be the result of carrying out the literal disclosure and instructions of a prior art document, in other words if there remains a "grey area", then the case on anticipation based on such a document must fail" (Reasons 2.1).

- 3.9.7 Thus, document D3 would be novelty destroying for the subject-matter of Claim 1 provided it could be established beyond any reasonable doubt that the composition of the isocyanate B223 meets the requirements set out in Claim 1 for the isocyanate component.
- 3.9.8 In this connection, the Board considers it as established, in view of document D1a, in which both denominations B233 and Lupranat® M 50 are used for designating the same isocyanate product to be delivered to the client, and in view of the declaration of Mr Pohl (document D40), that the isocyanate B223 is the same product as Lupranat® M 50. This has also not been contested by the Respondent.
- 3.9.9 Analyses of the composition of Lupranat® M50 have been disclosed in documents D2 and D23. According to document D2 which refers to an analysis of a lot of Lupranat® M 50 produced on 27 April 1996, Lupranat® M 50 exhibits a content of 2,4' MDI of 1.5%, a content of 4,4' MDI of 28.8%, and a content of 3-ring oligomers of 31.1%. Although D2 does not indicate whether these percentages are percentage in weight, it is has been established by the declaration of Mr Jean Peeters (cf. D22) that these percentages were weight percent.

This implies that according to D2, the amount of 2-ring oligomers is 30.3% by weight and the amount of 3-ring oligomers is 31.1% by weight, and hence that the ratio of 2-ring to 3-ring oligomers is 0.97. In other words Lupranat® M50 as analysed in document D2 would meet the requirements set out in Claim 1 for the isocyanate composition.

- 3.9.10 Document D23, which relates to an analysis of a lot of the product Lupranat® M50 produced on 7 May 1991, indicates for this product a 2-ring oligomer content of 32.1% and a 3-ring oligomer content of 27.9%, which percentages, in view of document D22, should also be regarded as percentages in weight. Consequently, Lupranat® M50 analysed in document D23 exhibits an amount of 2-ring oligomers of 32.1% by weight and a ratio of 2-ring to 3-ring oligomers of 1.15. In other words, Lupranat® M50 as analysed in document D23 would also meet the requirements set out in Claim 1 for the isocyanate composition.
- 3.9.11 In that context, the Board notes that the Respondent, although not having contested as such the validity of the analyses carried out in D2 and D23, has submitted that it had had no possibility to check their validity, and, taking into account the variability with time of the product Lupranat® M50 (B223), it has hence not been proven beyond any reasonable doubt that the composition of Lupranat® M50 would inevitably fall under the definition of the isocyanate composition set out in Claim 1, and that document D3 could not be considered as novelty destroying for the subject-matter of Claim 1. In order to support its argumentation in that respect, the Respondent has referred to the decision T 950/00

and to its own analyses made on the product Lupranate® M20S as disclosed in the documents D25 to D32.

3.9.12 In the case under consideration in the decision T 950/00 (Reasons point 3.1), it was considered that there was no certainty that a commercial product (i.e. Vinapas® Dispersion SAF 54) delivered on 10 September 1990 would inevitably exhibit the same property in terms of a specific parameter MFT as disclosed in a technical information leaflet of Vinapas® Dispersion SAF 54 published more than 6 years earlier, and that, in view of the very small overlap between the value of this parameter as indicated in the technical leaflet (i.e. 10 to 14°C) and the range of this parameter claimed in the patent in suit (8 to 12°C), it was not proven that the MFT parameter of the delivered product was inevitably in the claimed range.

3.9.13 In the present case, D2 refers to an analysis of Lupranat® M50 made less than 5 months before the publication of D3, and the results of the analysis of D23 carried out 5 years before the publication of D3 merely shows a relatively slight variation with the results indicated in D2 in respect of the amount of 2-ring isomers (32.1% instead of 30.3% and of the ratio of 2-ring oligomers to 3-ring oligomers (1.15 instead of 0.97)). There is hence no evidence on file of a significant variability of the product Lupranat® M50 over years.

3.9.14 Furthermore, in contrast to the case considered in decision T 950/00 where the values of the measured parameter indicated in the prior art slightly

overlapped with those required by the patent in suit, the values detected in D2 and D23 (cf. paragraphs 3.9.9 to 3.9.10, above) for the amount of 2-ring oligomers and the ratio of 2-ring to 3-ring oligomers of Lupranat® M50 (i.e. B223) are consistently clearly and indisputably within the claimed range of 12 to 42% and 0.2 to 1.8 respectively.

3.9.15 Consequently, it cannot remain, in the Board's view, any "grey area", which could cast a doubt on the fact that the isocyanate B223 used in the system Elastopor® VP H 230/008 meets the requirements set out in Claim 1 for the isocyanate composition.

3.9.16 This conclusion cannot be altered by the arguments presented by the Respondent in view of its analyses carried out by the on the product Lupranat® M20S. This is because the fact that the product Lupranat® M20S might have exhibited a such variability over years in the period 1988 (D27) to 2000 (D29) in terms of 2-ring and 3-ring oligomers content that its composition might be either inside (D32) or outside (D25 to D31) the range set out in Claim 1 of the patent in suit, is totally irrelevant to demonstrate that a different product i.e. Lupranat® M50 (B223) would also show a similar variability over years. On the contrary, as indicated above in paragraphs 3.9.9 and 3.9.10, the analyses carried out on Lupranat® M50 in D2 and D23 show a very little variation of its content of 2-ring oligomers and of its ratio of 2-ring to 3-ring oligomers, which remained steadily within the claimed ranges according to Claim 1 of the patent in suit.

3.10 Consequently, the Board comes to the conclusion that D3 is a novelty destroying document for the subject-matter of Claim 1.

3.11 The same conclusion would apply for document D36, which essentially differs from document D3 only in that the 5-component polyurethane system described therein i.e. Elastopor® EXH 1122/1, comprises as a polyol the product Elastopor® EXH 1122/1/0 instead of the Elastopor® VP H 230/008/0, and in that the amount of KX 315 in the formulation for the test reception has been set to 2.5 parts by weight instead of 2.1 parts by weight in D3.

3.12 Although for this reason alone, the main request as a whole cannot be accepted, the Board deems it appropriate to also deal with the further objection of lack of novelty of the subject-matter of Claim 5 as alleged the Appellant in view of documents D37 and D15.

3.13 Document D37, which is technical leaflet published in August 1996 (i.e. the same date as D3) referring to a five-component polyurethane system for the manufacture of rigid polyurethane foams Elastopor® VP H 230/006 consisting of:

for the polyol component (A-component)

(i) Elastopor® VP H 230/006/0 (polyol mixture without activator but with flame retardant);

(ii) Aktivator KX 315;

(iii) Zusatzmittel ZM 99; and

(iv) Treibmittel n-pentane and

for the Isocyanat component (B-component)

(v) MDI (Diphenylmethanediisocyanat) (cf. D37, "Systembeschreibung").

3.14 In its Section "Eingangsprüfung" D37 discloses a formulation for the reception test of the delivered system. This composition consists of:
100,0 parts by weight of Elastopor® VP H 230/006/0;
3,1 parts by weight of KX 315;
2.2 parts by weight of ZM 99,
6,0 parts by weight of n-pentane
140,0 parts by weight of Isocyanat B223. D37 further defines the foaming characteristics which should be met by this composition (cf. "Schäumverhalten").

3.15 In this connection, the Board notes that Claim 5 of the main request requires, explicitly,

(i) that the polyisocyanate composition be reacted with an isocyanate reactive composition in the presence of a hydrocarbon blowing agent;

(ii) and that the polyisocyanate composition comprises (a) from 15 to 42 percent by weight of diphenylmethane diisocyanate, (b) three ring oligomers of polyphenylene polymethylene polyisocyanate in an amount such that the ratio of (a) to (b) is equal to from 0.2 to 1.8 and (c) higher homologues of polyphenylene polymethylene polyisocyanate.

3.16 Consequently, since n-pentane is a hydrocarbon blowing agent, and since as shown above isocyanate B223 has a composition which meets the requirements set out in Claim 5, the Board comes to the conclusion that D37 is

a novelty destroying document for the subject-matter of Claim 5.

- 3.17 Document D15 discloses in its Examples 7 and 8 the manufacture of a rigid polyurethane foam by reacting 100 parts by weight of a polyol component, with 150 parts by weight of polyisocyanate referred as Desmodur® 44V70 in presence of 11 parts of an hydrocarbon blowing agent (n-pentane in Ex.7, Cyclopentane in Ex.8) and of 1.38 parts by weight in total of further additives (accelerators, cell regulator).
- 3.18 Since, however, document D15 does not explicitly disclose the composition of the isocyanate Desmodur® 44V70, the question of novelty of the subject-matter of Claim 5 over D15 boils down hence to the question as to whether it can be established using the same standard of proof as previously applied in the case of the composition of B223 (cf. paragraph 3.9.7 above), that the product Desmodur® 44V70 of Bayer AG used in the Examples 7 and 8 of D15 meets the requirements set out in Claim 5 for the isocyanate composition (cf. paragraph 3.15 (ii) above).
- 3.19 In that respect, the Appellant has referred to documents D38 and D39.
- 3.20 Document D38 is an analysis report dated 13 November 1992 which discloses, in particular, the amount of 2-ring oligomer and 3-ring oligomers of 87 charges of the MDI isocyanate Desmodur® 44V70. The authenticity of this report is certified by the declaration of Mr Udo Quade of Bayer AG (D39), in which it is further indicated that the percentages mentioned in D38 for the

amount of 2-ring and 3-ring oligomers are weight percentages.

- 3.21 According to D38 the amount of 2-ring oligomers in the MDI product Desmodur® 44V70 varies between 31.29 (charge Nr. 2051//9D) and 41.38 % by weight (cf. charge Nr. 2019//9D) and that the ratio of 2-ring oligomers to 3-ring oligomers varies between 0.85 and 1.3 (as calculated by the Respondent and not contested by the Appellant).
- 3.22 It thus follows that all the values measured in document D38 for the amount of 2-ring oligomers and ratio of 2-ring to 3-ring oligomers of the product Desmodur® 44V70 are clearly inside the ranges set out for these parameters in Claim 5 of the patent in suit.
- 3.23 It is further noted by the Board that the date of that analysis report (i.e. 13 November 1992) is close to the filing date of D15 (26 May 1993), so that the considerations made in T 950/00 about a long period of time between the analysis and the delivery of the product (cf. paragraph 3.9.12 above) are not relevant in the present case.
- 3.24 Consequently, in analogy with the reasons given in the case of the composition of the isocyanate B223 (cf. paragraph 3.9.12 to 3.9.15 above), the Board comes to the conclusion that the product Desmodur® 44V70 used in D15 meets the requirements set out in Claim 5 of the patent in suit.

3.25 It thus follows from the above that document D15 is a novelty destroying document for the subject-matter of Claim 5.

First auxiliary request as submitted with the letter dated 21 September 2006 of the Respondent

4. *Admissibility*

4.1 Claims 1 to 9 of this first auxiliary request differ from Claims 1 to 9 of the main request, in that it has been indicated in independent Claim 1 that the reaction of the polyisocyanate composition with an isocyanate reactive composition takes place in presence of water and a hydrofluorocarbon blowing agent and in independent Claim 5 that the reaction of the polyisocyanate composition with an isocyanate reactive composition takes place in presence of water and a hydrocarbon blowing agent.

4.2 According to the Respondent, the presence of water is disclosed in paragraph [0032] of the granted patent and on page 7, lines 1 to 6 of the application as originally filed.

4.3 Independently of the fact that it is questionable, in the Board's view, as to whether this amendment is indeed supported by the application as originally filed since the passages mentioned by the Respondent appear to necessarily limit the amount of water to be added (i.e. 0.1 to 5% of the reaction system), it is in any case evident that the presence of water has not been the subject of a granted claim, in other words, the new

claims 1 to 9 include subject-matter which had not previously be claimed.

- 4.4 It is further evident, in the Board's view, that the introduction of this feature raises new factual issues, in particular, since water, in contrast to the hydrofluorocarbon and hydrocarbon blowing agents, reacts with the polyisocyanate, and hence would modify the properties of the obtained rigid foams due to the presence of the thus formed urea bonds.
- 4.5 In this connection, it cannot however be concluded that all relevant prior art with respect to this aspect is on file, or that this aspect has been searched (cf. decision T 234/92 of 12 January 1995, not published in OJ EPO; Reasons point 2). Furthermore, due to the very late filing of this auxiliary request, which has furthermore been received by the Appellant only few days before the oral proceedings, it cannot be considered that the Appellant has had an opportunity to deal with this aspect, even if it might be true that the presence of water had been incorporated in Claim 5 of the first auxiliary request and in Claim 1 of the fifth auxiliary request submitted by the Patent Proprietor with its letter dated 26 August 2004 during the opposition proceedings, since these requests have not been dealt with in the decision under appeal, nor resubmitted by the Respondent in response to the Statement of Grounds of Appeal filed by the Appellant.
- 4.6 Consequently, the Board, in accordance with Article 10b(3) of the Rule of Procedure of the Boards of Appeal, decides not to admit the first auxiliary

request submitted with letter dated 21 September 2006 into the proceedings.

First auxiliary request as submitted during the oral proceedings of 11 October 2006.

5. *Admissibility*

As indicated in Section VIII (d) above, the Appellant had no objection to the introduction of this request into the proceedings. Consequently, the Board sees no reason not to admit this request into the proceedings.

6. *Wording of the claims*

6.1 It is noted by the Board that an objection under Article 100(c) EPC has neither been raised against the granted patent by the Opponent, nor dealt with in the appealed decision.

6.2 This has as a consequence that the assessment of the allowability of the claims of the first auxiliary request under Article 123(2) EPC must be limited to that of the amendments made during the opposition and/or opposition appeal proceedings (G 9/91 OJ EPO, 1993, 420).

6.3 In this context the Board notes that Claim 1 of this request differs from Claim 1 as granted in that the features of granted Claim 2 in terms of amount of blowing agent have been incorporated therein, and that Claim 4 differs from Claim 5 as granted in that the features of granted Claim 7 in terms of amount of blowing agent have been incorporated therein.

6.4 The Board further observes that dependent Claims 2 to 3 correspond to granted Claims 3 to 4, and dependent Claims 5 to 6 correspond to granted Claims 8 to 9.

6.5 Consequently, Claims 1 to 6 are not open to objection under Article 123(2) EPC.

6.6 It is, in the Board's view, evident that the amendments in Claim 1 in respect to granted Claim 1, i.e. the limitation of the amount of blowing agent, inevitably result in a restriction of the scope of protection with respect to granted Claim 1. The Board also comes to the same conclusion for independent Claim 4 with respect to granted Claim 5.

6.7 Thus, the Board is also satisfied that the requirements of Article 123(3) EPC are met by all the claims.

7. *Novelty*

7.1 As indicated above in paragraph 3.17 document D15 discloses in its Examples 7 and 8 the manufacture of a rigid polyurethane foam by reacting 100 parts by weight of a polyol component, with 150 parts by weight of polyisocyanate referred as Desmodur® 44V70 in presence of 11 parts of an hydrocarbon blowing agent (n-pentane in Ex.7, cyclopentane in Ex.8) and of 1.38 parts by weight in total of further additives (accelerators, cell regulator).

7.2 It thus follows that the amount of hydrocarbon blowing agent in Examples 7 and 8 of D15 is 4.19% by weight based on the entire reaction system used, and that

document D15 must be also considered as a novelty destroying document for the subject-matter of Claim 4 of this first auxiliary request.

- 7.3 Consequently, the first auxiliary request filed during the oral proceedings of 11 October 2006 must be refused.

Second auxiliary request as submitted during the oral proceedings of 11 October 2006.

8. *Admissibility*

- 8.1 Claims 1 to 6 of the second auxiliary request differ from Claim 1 to 6 of the first auxiliary request submitted during the oral proceedings of 11 October 2006, in that it has been indicated in independent Claim 4 that the polyisocyanate composition comprises 20 to 40 percent by weight of diphenylmethane diisocyanate.
- 8.2 According to the Respondent, this specific range is disclosed in paragraph [0015] of the granted patent and on page 5, lines 9 to 13 of the application as originally filed.
- 8.3 While this specific range of the amount of diphenylmethane diisocyanate in the polyisocyanate composition has not been the subject of a granted claim, the introduction of this feature does not raise, in the Board's view, new factual issues, since the amount of diphenylmethane diisocyanate in the polyisocyanate composition was already a feature of the granted patent, and since this restricted range has not been associated with any specific technical effect in the application

as originally filed. The introduction of this restricted range hence merely amounts to an arbitrary limitation of the originally claimed and searched range in order to try to overcome the objection of lack of novelty over D15.

8.4 Under these circumstances, it could hence reasonably be expected that the Appellant could deal with the subject-matter of the second auxiliary request, despite the fact that this request had been submitted at a very late stage of the appeal proceedings, i.e. at the oral proceedings before the Board.

8.5 Consequently, the Board decides to admit the second auxiliary request into the proceedings.

9. *Wording of the claims*

9.1 As indicated above in paragraph 8.1, Claims 1 to 6 of the second auxiliary differ from Claims 1 to 6 of the first auxiliary request only in that amendments concerning the polyisocyanate composition have been carried out in Claim 4 thereof.

9.2 Since, as also submitted by the Respondent, these amendments are supported by the application as originally filed (cf. page 5, lines 9 to 13), the Board comes to the conclusion that the second auxiliary request meets the requirements of Article 123(2) EPC.

9.3 It is, in the Board's view, evident that the amendments in Claim 4 in respect to granted Claim 5, i.e. the limitation of the amount of blowing agent and the limitation of the content of diphenylmethane

diisocyanate in the polyisocyanate composition inevitably result in a restriction of the scope of protection in respect to granted Claim 5.

9.4 Thus, the Board is satisfied that the requirements of Article 123(3) EPC are met by all the claims.

10. *Novelty of the subject-matter of Claim 1*

10.1 Claim 1 of the second auxiliary request differs from Claim 1 as granted in that the amount of hydrofluorocarbon blowing agent has been limited to 2 to 20% by weight based on the entire reaction system.

10.2 While documents D3 and D36 have been considered as novelty destroying for the subject-matter of granted Claim 1, the Board observes that in the respective sections "Verarbeitung" of these documents it is merely indicated that the blowing agent R 134a should be used in amount of 2 to 3 parts by weight per 100 parts by weight of the respective polyol component. Since, according to the test composition used for reception purposes of the polyurethane systems disclosed in these documents, the amount of the polyisocyanate is 133 parts for 100 parts of the polyol component it is evident that the amount of blowing agent R 134a would be in any case below 2% by weight based on the entire reaction system.

10.3 Consequently, the subject-matter of Claim 1 must be regarded as novel over the cited prior art.

11. *Inventive step*

12. The patent in suit is concerned with a process which utilizes a specific polymeric polyisocyanate component for the production of rigid polyurethane foams with hydrofluorocarbon blowing agent.

12.1 Such a process is known from documents D3 and D36.

12.2 The technical problem with which the patent in suit was originally concerned was to provide a process for the manufacture of hydrofluorocarbon blown rigid polyurethane foams having improved physical (i.e. compressive strength, dimensional stability) and thermal insulation properties. It was suggested that this was achieved by using a specific polymeric polyisocyanate composition (cf. patent in suit paragraphs [0009] and [0010]). In that respect, Example 2 of the patent specification relies on a comparison between hydrofluorocarbon blown rigid polyurethane foams using different polymeric MDI polyisocyanate in order to demonstrate the effect of the specific composition of the polymeric polyisocyanate according to the patent in suit on the physical and thermal properties of the obtained foams.

12.3 However, as stated in decision T 20/81 (OJ EPO 1982, 217) the nature of the problem should be determined on the basis of objective criteria, and this requires the assessment of the technical effect vis-à-vis the closest state of the art.

12.4 In this connection, it is noted by the Board that the subject-matter of Claim 1 differs from the disclosure

of D3 and D36 only in that a higher amount of hydrofluorocarbon blowing agent is used in the claimed process.

- 12.5 Although D3 and D36 do not expressly refer to the mechanical and thermal properties of the obtained rigid foams, the foams disclosed therein are used in building and insulation materials (cf. D3 and D36, paragraph "Anwendungszweck"), so that there can be no doubt that D3 and D36 are indeed also concerned with these properties, and hence with a similar technical problem as the patent in suit.
- 12.6 This implies that the technical problem, which has been originally formulated in the patent in suit, has been stated in respect of a prior art which was far more remote than the one represented by documents D3 or D36.
- 12.7 This further implies that the technical problem underlying the patent in suit must be reformulated starting from D3 or D36 as closest state of the art.
- 12.8 In this connection, the Board notes that no comparison between the polyurethane rigid foams obtained according to the process of Claim 1 and those obtained according to D3 or D36 has been made in the patent in suit or submitted by the Respondent (Patent proprietor).
- 12.9 Nevertheless, it is well known that the increase of the amount of blowing agent has predictable consequences on the density of the rigid polyurethane foams (cf. for example D43, page 4, paragraph "Blowing agent"), so that a reformulated problem consisting in the production of rigid polyurethane foams of lower density

than those obtained according to D3 and D36 could be deduced by the skilled person from the patent in suit in relation to this closest prior art (cf. also T 386/89 of 24 March 1992, not published in OJ EPO; Reasons point 4.3).

12.10 In that context, taking into account the predictable effect of the increase of the amount of blowing agent on the density of the rigid polyurethane foams, the absence of evidence of a particular effect of the choice of the range of amount of hydrofluorocarbon blowing agent (i.e. between 2 and 20% by weight), and the further fact that amounts such as 13% and 20% by weight of hydrofluorocarbon blowing agent are usual for the manufacture of rigid polyurethane foams (cf. document D8, Tables 6 and 13), the Board can only come to the conclusion, that the subject-matter of Claim 1 must be considered as obvious starting from D3 or D36 as closest prior art (Article 56 EPC).

12.11 Consequently, the second auxiliary request must be refused.

Third auxiliary request submitted at the oral proceedings of 11 October 2006

13. *Admissibility*

13.1 According to several decisions of the Boards of Appeal (e.g. T 153/85 (OJ EPO 1988, 001); T 955/91 of 4 February 1993 (not published in OJ EPO)), a Board may justifiably refuse to consider alternative claims which have been filed at a very late stage, if such alternative claims are not clearly allowable. However,

as stated in decision T 577/97 of 5 April 2000 (not published in OJ EPO), the discretion not to admit auxiliary requests should in principle be limited to exceptional cases.

13.2 As indicated above in Section VII (d), Claim 1 of the third auxiliary request is the same as Claim 1 of the second auxiliary request. As stated above in paragraph 12.10, Claim 1 of the second auxiliary request does not however meet the requirements of Article 56 EPC.

13.3 It follows that Claim 1 of the third auxiliary request is not merely "not clearly allowable" but, in contrast, clearly not allowable under the provisions of Article 56 EPC. Thus, in the Board's view, this situation justifies the Board to exercise its discretion not to admit this late filed request.

13.4 Consequently, the third auxiliary request is not admitted into the proceedings.

14. Since, none of the requests presented by the Respondent can be granted, the patent must be revoked.

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