

**Internal distribution code:**

- (A) [ ] Publication in OJ  
(B) [ ] To Chairmen and Members  
(C) [X] To Chairmen  
(D) [ ] No distribution

**D E C I S I O N**  
**of 24 November 2004**

**Case Number:** T 0946/00 - 3.3.1

**Application Number:** 94905459.7

**Publication Number:** 0628022

**IPC:** C07C 37/14

**Language of the proceedings:** EN

**Title of invention:**

Process for the preparation of polyisobutyl hydroxyaromatics

**Patentee:**

Chevron Chemical Company LLC

**Opponent:**

Ethyl Corporation  
The Lubrizol Corporation

**Headword:**

Polyisobutylphenols/CHEVRON

**Relevant legal provisions:**

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

**Keyword:**

"Main and auxiliary request: novelty (yes) - prior art silent about distinguishing feature - no implicit disclosure - inadequate evidence - multiple selection; inventive step (no) - obvious to try - no deterrent teaching in the art"

**Decisions cited:**

T 0002/81, T 0099/85, T 0249/88, T 0800/91, T 1053/93,  
T 0068/95

**Catchword:**

-



Case Number: T 0946/00 - 3.3.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.1  
of 24 November 2004

**Appellant I:** Ethyl Corporation  
(Opponent I) 330 South Fourth Street  
Richmond, Virginia 23219 (US)

**Representative:** Sandmair, Kurt, Dr. Dr.  
Patentanwälte  
Schwabe, Sandmair, Marx  
Stuntzstrasse 16  
D-81677 München (DE)

**Appellant II:** The Lubrizol Corporation  
(Opponent II) 29400 Lakeland Boulevard  
Wickliffe, Ohio 44092 (US)

**Representative:** Tauchner, Paul, Dr.  
VOSSIUS & PARTNER  
Postfach 86 07 67  
D-81634 München (DE)

**Appellant III:** Chevron Chemical Company LLC  
(Proprietor of the patent) 2613 Camino Ramon  
San Ramon, CA 94583-4289 (US)

**Representative:** Nash, David Allan  
HASELTINE LAKE,  
Redcliff Quay  
120 Redcliff Street  
Bristol BS1 6HU (GB)

**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office posted  
23 August 2000 concerning maintenance of  
European patent No. 0628022 in amended form.

**Composition of the Board:**

**Chairman:** A. J. Nuss  
**Members:** R. Freimuth  
R. T. Menapace

## Summary of Facts and Submissions

- I. The Appellant I (Opponent I), the Appellant II (Opponent II) and the Appellant III (Proprietor of the patent) lodged appeals against the interlocutory decision of the Opposition Division posted on 23 August 2000 which found that European patent No. 628 022 in the form as amended according to the then pending main request did not satisfy the requirements of the EPC, but that it could be maintained in the form as amended according to the then pending auxiliary request.
- II. Notice of Opposition had been filed by Appellants I and II requesting revocation of the patent as granted in its entirety for lack of novelty and of inventive step based *inter alia* on the documents:
- (1) THESE présentée pour l'obtention du titre de DOCTEUR de l'UNIVERSITE PIERRE et MARIE CURIE par Didier Chamois, Paris, 1988,
  - (9) WO-A-93/19140,
  - (10) GB-A-1 159 368,
  - (17) BP Chemicals Press Cuttings:
    - (i) The Chemical Engineer 13 December 1990,
    - (ii) European Chemical News 17/24 December 1990,
    - (iii) Manufacturing Chemist January 1991,
    - (iv) Europa Chemie 31 January 1991,
  - (23) Polymer Bulletin, Vol. 8, pages 563 to 570 (1982),
  - (24) US-A-4 429 099 and
  - (32) Affidavit of Dr Colucci, undated, submitted on 9 June 2000.

III. The decision under appeal was based on an amended set of ten claims according to the main request, independent claim 1 thereof reading as follows:

"1. A process for the preparation of a polyisobutyl hydroxyaromatic compound which comprises alkylating a hydroxyaromatic compound in the presence of an acidic alkylation catalyst with a polyisobutene having a number average molecular weight in the range of about 300 to 5,000 wherein the polyisobutene contains at least 70% of a methylvinylidene isomer, wherein the molar ratio of hydroxyaromatic compound to polyisobutene is 1.2:1 to 5:1, wherein the acidic alkylation catalyst is trifluoromethanesulfonic acid or a Lewis acid, selected from boron trifluoride and boron trifluoride complexes, and wherein the alkylation temperature is in the range of 0° to 100°C."

IV. The Opposition Division found that the subject-matter of the patent in suit as amended according the main request was anticipated and that the patent in suit as amended according to the then auxiliary request was novel and inventive.

The Opposition Division held that document (9), which was state of the art according to Article 54(3) and (4) EPC, destroyed the novelty of the subject-matter of claim 1 according to the main request. That document described in example 1 the claimed process apart from the ratio of the hydroxyaromatic compound phenol to polyisobutylene. However, this undisclosed feature could be calculated back as demonstrated in document (32) and the result was a ratio within the claimed range. Thus, this feature indicated in claim 1 of the

patent in suit was also satisfied in the process of document (9) with the consequence that the claimed process was anticipated.

The subject-matter of claim 1 according to the then pending auxiliary request was found to be novel over document (9) due to a disclaimer. It was also held to involve an inventive step starting from document (1) as the closest prior art. The problem to be solved consisted in providing a process showing low degradation at a reasonable reaction temperature. The solution to this problem was seen in substituting the specific catalysts indicated in claim 1 for the tin chloride catalyst of document (1). While the use of the specific catalysts indicated in claim 1 was known for example from documents (10), (23) and (24), there was no evidence on file that the skilled person would have used those specific catalysts with the expectation of solving the problem underlying the patent in suit as defined above.

- V. At the oral proceedings held on 24 November 2004 the Appellant III maintained his main request (see point III *supra*) and as sole subsidiary request the second auxiliary request submitted on 22 October 2004, thus, superseding any previous request.

Claim 1 of that sole auxiliary request differed from claim 1 according to the main request exclusively in additionally specifying that "the number of equivalents of catalyst per equivalent of polyisobutene is 0.005:1 to 0.6:1".

VI. The Appellants I and II submitted that document (9), in particular example 1 thereof, was state of the art according to Article 54(3) and (4) EPC and anticipated the claimed subject-matter. Though example 1 was silent on the amount or on the ratio of the polyisobutene used, the skilled person was able to calculate it back, as demonstrated in the affidavit (32). Moreover pages 11 to 14, in particular page 13, of document (9) generally disclosed all the features indicated in claim 1. Furthermore documents (23) and (24) were novelty destroying since the aromatic central unit comprised in the compounds disclosed therein could be considered as a small impurity.

With respect to inventive step, the Appellants I and II started either from document (1) or document (10) as the closest prior art. When starting from document (1) the problem underlying the patent in suit was the provision of an alkylation process operating at a reasonable temperature. Replacing the tin catalyst of document (1) by the well known boron trifluoride catalyst was obvious for the skilled person. When starting from document (10), the only difference between that process and the claimed one was the vinylidene content of the polyisobutene. However, those polyisobutenes having high vinylidene contents were well known in the art and available under the commercial name "Ultravis" (see *inter alia* document (17)). Their enhanced reactivity due to the more reactive double bonds leading to an increase in yields was also known. Therefore substituting a polyisobutene with high vinylidene content for the polyisobutene in the process of document (10) was obvious and not inventive.

Furthermore, the Appellant II challenged the breadth of the claims. He submitted that the purported increase in yield could not be achieved within the whole temperature range claimed, i.e. up to 100°C. In support of his submission he filed a test report with letter dated 17 July 2001 (Annex 1).

Having regard to the auxiliary request, The Appellants I and II submitted that the ratio of catalyst used now introduced into claim 1 was already described in document (10) and, hence, could not support inventive step.

VII. The Appellant III submitted that document (9) was not novelty destroying. That document did not disclose directly and unambiguously the molar ratio of phenol to polyisobutene. The calculations made by the Appellant I in document (32) were based on speculations about the degradation occurring in the process thereby going beyond the actual content of document (9). Within the general disclosure comprised in pages 11 to 14 of document (9) a multiple selection was needed in order to arrive at subject-matter falling under claim 1. That multiple selection resulted in a fresh combination of specific features which was not disclosed in document (9). The telechelic polyisobutenes disclosed in documents (23) and (24) were not encompassed by the polyisobutenes according to claim 1 which latter referred to a particular chemical entity and was not an "open" definition covering also other entities.

With respect to inventive step, the Appellant III started from document (1) or document (10) as the

closest prior art. He submitted that the skilled person was prevented from substituting the boron trifluoride catalyst for the tin catalyst of that document (1) since the former was more reactive than the latter which could result in an unwanted degradation. Starting from document (10) the problem underlying the patent in suit consisted in minimizing degradation while maintaining high yield. The solution was to be found in the use of a polyisobutene having high methylvinylidene content in the alkylation process. Document (17) did not address degradation or yield and, thus, could not give a hint how to solve the problem underlying the patent in suit. Moreover, there was no certainty of success to achieve less degradation when using a polyisobutene having high methylvinylidene content since the high reactivity thereof deterred the skilled person from doing so.

Furthermore he submitted that the increase in yield could be achieved within the whole temperature range claimed. In support of his submission he filed a test report with letter dated 22 October 2004 (Appendix B).

With respect to the auxiliary request, the Appellant III submitted that the fresh feature determining the amount of the catalyst used was rather unnecessary since it merely restricted the scope of the claim without contributing to the presence of inventive step.

VIII. The Appellants I and II requested that the decision under appeal be set aside and that the patent be revoked.



The Appellant III requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request dated 11 October 1999 or on the basis of the second auxiliary request filed on 22 October 2004.

IX. At the end of the oral proceedings the decision of the Board was announced.

### **Reasons for the Decision**

1. The appeal is admissible.

#### *Main request*

2. *Amendments (Article 123 EPC)*

In claim 1 the features of granted claims 5 and 7, i.e. the acidic alkylation catalyst being either trifluoromethanesulfonic acid or a boron trifluoride (complex), have been incorporated into granted claim 1. Furthermore the feature of granted claim 9, i.e. the alkylation temperature range of 0° to 100°C, has been added. These amendments find support in claims 5, 7 and 9 of the application as filed and, thus, comply with the requirements of Article 123(2) EPC.

Said amendments of claim 1 bring about a restriction of the scope of that claim, and therefore of the protection conferred thereby, which is in keeping with the requirements of Article 123(3) EPC.

3. *Novelty*

The Appellants-Opponents challenged the novelty of the claimed invention exclusively with regard to documents (9), and (23) or (24), respectively, without relying on any further document cited in the proceedings.

Therefore, the Board limits its considerations with respect to novelty to those documents.

3.1 The Board observes that it is a generally applied principle that for concluding lack of novelty, there must be a direct and unambiguous disclosure in the state of the art which would inevitably lead the skilled person to subject-matter falling within the scope of what is claimed.

3.2 In the present case, document (9), which is state of the art according to Article 54(3) EPC, is directed to a fuel additive comprising a polyalkyl hydroxyaromatic compound which is prepared by alkylating a hydroxyaromatic compound in the presence of an acidic catalyst. That process is exemplified in the sole preparation example 1 which is literally identical to example 1 of the patent in suit apart from the fact that any indication of the amount of polyisobutene is lacking in the former. Thus, example 1 of document (9) is silent on the specific molar ratio of the hydroxyaromatic compound to polyisobutene and the missing indication of the amount thereof prevents the calculation of that ratio. However, claim 1 of the patent in suit requires a particular molar ratio of 1.2:1 to 5:1. Therefore, there is no dispute between the parties that this molar ratio is not explicitly disclosed in document (9).

Nor is this particular molar ratio implicitly disclosed in that document. The Appellants-Opponents, based on document (32), argued that the initial amount of polyisobutene used in example 1 of document (9) could be calculated back with the consequence that the molar ratio of the hydroxyaromatic compound to polyisobutene could be determined. However, example 1 of document (9) is completely silent on the level of degradation / cracking occurring during the operation of the preparation process. Document (32) makes therefore clear that **assumptions** must be made as to the level of degradation/cracking in order to be capable of calculating back the initial amount of polyisobutene used. Thus, document (32) elaborates a back calculation while *expressis verbis* "assuming" different numerical level of degradation/cracking (page 3, paragraphs 2, 3 and 4; Tables 3 to 5).

Therefore, the Appellants-Opponents when reading example 1 of document (9), have merely speculated with the consequence that the particular molar ratio claimed of hydroxyaromatic compound to polyisobutene is not necessarily satisfied in the process described in that example.

According to established jurisprudence of the Boards of Appeal a document does not disclose a specific technical feature if it does not emerge clearly and unambiguously therefrom. The indication of a specific technical feature in the patent in suit which is lacking in that document amounts to the addition of fresh information not provided for the skilled person by that document (see e.g. decision T 99/85, OJ EPO

1987, page 413, point 2.2 of the reasons). Applying this principle in the present case results in the conclusion that example 1 of document (9) does not disclose clearly and unambiguously a molar ratio of hydroxyaromatic compound to polyisobutene within the claimed range with the consequence that this document is not detrimental to the novelty of the process of the patent in suit.

- 3.3 Document (9), in the section on pages 11 to 14, in particular page 13, generally addresses the polyalkyl hydroxyaromatic compounds and processes for their preparation. That document discloses on page 11, line 25 a molecular weight of 400 to 5000, on page 12, line 19 *inter alia* polyisobutene and on line 26 *inter alia* a methylvinylidene isomer content of at least 70%. The passage bridging page 12, line 33 and page 13, line 1 addresses the commercial product "Ultravis 30" which is a polyisobutene having a molecular weight of 1300 and a methylvinylidene content of 74%. Document (9) addresses on page 13 numerous alternative known preparation processes and *inter alia* describes in line 21 a reaction temperature of 0 to 60°C and in line 25 a molar ratio of a boron trifluoride/phenol complex to olefin polymer of 1:1 to 3:1. The Appellant-Opponents argued that this general disclosure in that section of document (9) amounted to the disclosure of the particular combination of features as defined in claim 1 of the patent in suit.

The particular combination claimed, however, results from a multiple selection within numerous alternative features given in document (9). In the absence of any pointer to **that** particular combination, this combined

selection of features does not, for the skilled person, emerge clearly and unambiguously from that section of the document. Furthermore, that section does not reveal the molar ratio of the phenol as required in the claimed process, but that of a phenol complex which is different.

Therefore, the particular combination of features specified in claim 1 of the patent in suit, is not disclosed in that section of document (9). Hence, it does not destroy the novelty of the subject-matter claimed.

- 3.4 Document (23) describes the alkylation of phenol by "telechelic PIB's" wherein polyisobutene units ("PIB") are linked via the telechelic groups bis- or trisphenol. These telechelic compounds, thus, comprise within the molecule aromatic moieties, namely bis- or trisphenol. Polyisobutene, however, is a solely aliphatic compound when following standard chemical nomenclature and the Appellants-Opponents did not provide evidence to the contrary. For that simple reason, in both formulae on page 563, document (23) explicitly distinguishes between the telechelic aromatic moieties and the "PIB" units. Hence, the "telechelic PIB's" are not covered by the polyisobutene of present claim 1 with the consequence that document (23) cannot anticipate the subject-matter of the patent in suit.

Document (24) is identical to document (23) as regards its technical content which finding was not disputed between the parties. Therefore, the same considerations given above for document (23) also apply to document (24) resulting necessarily in the conclusion that also

document (24) does not anticipate the claimed subject-matter.

3.5 For these reasons, the Board concludes that the subject-matter of the patent in suit is novel in the sense of Article 54 EPC.

4. *Inventive step*

4.1 According to the established jurisprudence of the Boards of Appeal it is necessary, in order to assess inventive step, to establish the closest state of the art, to determine in the light thereof the technical problem which the invention addresses and successfully solves, and to examine the obviousness of the claimed solution to this problem in view of the state of the art. This "problem-solution approach" ensures assessing inventive step on an objective basis and avoids an *ex post facto* analysis.

4.2 Claim 1 of the patent in suit is directed to a process for preparing a polyisobutyl hydroxyaromatic compound by alkylating a hydroxyaromatic compound in the presence of a particular acidic alkylation catalyst with a polyisobutene. Document (10) which is cited and acknowledged in the specification of the patent in suit on page 2, lines 16 to 21 as the closest prior art, describes such a preparation process (claim 1) wherein the hydroxyaromatic compound phenol is alkylated at a temperature of 0°C to 82°C (30 to 180°F) in the presence of the Lewis acid catalyst borontrifluoride with a polyisobutene having a number average molecular weight of 700 to 2800 (claim 6) while maintaining a molar ratio of phenol to polyisobutene of 2:1 to 4:1

(claim 6). Therefore the only difference between this known process and the claimed one resides in the methylvinylidene content of the polyisobutene used. That document (10) addresses the degradation problem (page 1, last paragraph) which represents an objective of the patent in suit (specification page 2, line 37).

Where the patent in suit indicates a particular piece of prior art as being closest to the claimed invention and the starting point for determining the problem underlying the patent in suit, in the present case document (10), then the Board should adopt this as the starting point for the purpose of the problem-solution analysis unless it turns out that there is closer state of the art of greater technical relevance (see e.g. decisions T 800/91, point 6 of the reasons; T 68/95, point 5.1 of the reasons).

Thus, the Board considers, in agreement with all the Appellants, that in the present case the process for preparing a polyisobutyl hydroxyaromatic compound described in the document specified above represents the closest state of the art and, hence, takes it as the starting point when assessing inventive step.

- 4.3 The Appellants, while not disputing the above findings, considered alternatively document (1) as closest piece of prior art. That document, which is not cited in the specification of the patent in suit, exemplifies a process for preparing a polyisobutyl hydroxyaromatic compound wherein the hydroxyaromatic compound phenol is alkylated with a polyisobutene at a temperature of  $-50^{\circ}\text{C}$  in the presence of a tin chloride catalyst (page 67). Thus, the process exemplified in document (1)

neither uses the particular acidic catalyst of the present invention, nor operates at the specific reaction temperature thereof. Therefore, two modifications are required in order to arrive at the claimed process. For these reasons, the Board concludes that document (1) is further away from the claimed invention than document (10) addressed in point 4.2 *supra*.

4.4 In view of the closest state of the art (10) the problem underlying the patent in suit, as indicated in the patent specification on page 2, lines 36, 37, 48 and 49 and as submitted by the Appellant-Patentee at the oral proceedings before the Board, consists in providing an improved alkylation process which minimizes degradation while maintaining high yield of the polyisobutyl hydroxyaromatic compound.

Both objectives, degradation and yield, are not separate technical effects independent from each other but are interrelated as an increased degradation necessarily entails a decrease of the yield and vice versa.

4.5 As the solution to this problem the patent in suit proposes the process according to claim 1 which is characterized by the use of a polyisobutene containing at least 70% of a methylvinylidene isomer.

4.6 The Appellants-Opponents and the Appellant-Patentee were divided on the question of whether or not the evidence presented in the specification of the patent in suit and in the opposition and appeal proceedings convincingly demonstrates that the proposed solution



successfully solves the problem underlying the invention of minimizing degradation while maintaining high yield when operating the process.

However, this issue need not to be decided by the Board since in any case the suggested solution to this problem is obvious in the light of the teaching of the further state of the art as set out in point 4.7 below.

4.7 When starting from the alkylation process known from document (10) wherein a hydroxyaromatic compound is alkylated with a polyisobutene it is a matter of course that the skilled person, seeking to minimize degradation while maintaining high yield, would turn its attention to that prior art just addressing these technical problems. He would take document (17)(i) into consideration which deals with the increased reactivity of particular polybutenes. He would be struck especially by the result of that increased reactivity which is taught to increase yields and reduce undesirable by-products.

That document (17)(i) addresses particular polybutenes bearing the commercial label "Ultravis", the individual polybutene "Ultravis 10" being explicitly named (last paragraph). That individual polybutene is a polyisobutene according to the patent in suit since it contains 76% of a methylvinylidene isomer and has a molecular weight of 950 as reported in the patent in suit on page 3, line 48 (cf. example 1).

Document (17)(i) points to "the advantage of more reactive double bounds" therein, which is the methylvinylidene isomer content, and teaches that the increased reactivity "can increase conversions and

yields, resulting in fewer undesirable by-products" (paragraph 3) wherein the term "undesirable by-products" paraphrases degradation.

The Board concludes from the above that document (17)(i) gives the person skilled in the art a concrete incentive on how to solve the problem underlying the patent in suit of minimizing degradation while maintaining high yield (cf. point 4.4 *supra*), namely by using a polyisobutene containing methylvinylidene isomer above the claimed threshold in the alkylation process known from the closest prior document (10), thereby arriving at the solution proposed by the patent in suit. Therefore, in the Board's judgement, it was obvious to try to follow the avenue indicated in the state of the art with a reasonable expectation of success without involving any inventive ingenuity.

4.8 For the following reasons the Board cannot accept the Respondent's arguments in support of inventive step.

4.8.1 The Appellant-Patentee argued that document (17)(i) would not address the technical problems of degradation and yield. Therefore it could not give any hint as to their solution.

However, document (17)(i) precisely addresses the technical problem underlying the patent in suit of achieving a high yield. This document also deals with the technical problem of degradation by addressing the mandatory result thereof, i.e. the "undesirable by-products". Document (17)(i) indicates how these undesirable by-products, tantamount to degradation, can be reduced and how the yield can be increased with the

consequence that it does give a hint to the solution of those technical problems. Therefore, the Appellant-Patentee's argument is not supported by the facts.

- 4.8.2 The Appellant-Patentee contended that there was no certainty of success to achieve less degradation when using in the alkylation process a polyisobutene containing a large percentage of methylvinylidene isomer as taught in document (17)(i) since the high reactivity of that polyisobutene deterred the skilled person from doing so. Hence, the skilled person was prevented from applying such a particular polyisobutene in the alkylation process known from the closest prior document (10).

However, when assessing inventive step it is not necessary to establish that the success of an envisaged solution of a technical problem was predictable with certainty. In order to render a solution obvious it is sufficient to establish that the skilled person would have followed the teaching of the prior art with a reasonable expectation of success (see decisions T 249/88, point 8 of the reasons; T 1053/93, point 5.14 of the reasons; neither published in OJ EPO).

In the present case, the Board cannot agree with the Appellant-Patentee's argument that due to some purported uncertainty about the predictability of success the skilled person would not have contemplated the particular polyisobutene containing a large percentage of methylvinylidene isomer in order to minimize degradation while maintaining high yield. The skilled person has a clear incentive from document (17)(i) to do so (see point 4.7 *supra*). It was only

necessary for him to confirm experimentally by routine work that substituting the polyisobutene containing methylvinylidene isomer above the claimed threshold for the conventional polyisobutene in the alkylation process known from document (10) indeed results in the expected decrease in degradation and increase in yield, thus arriving at the claimed invention without inventive ingenuity.

Nothing was submitted by the Appellant-Patentee from which the Board could reasonably conclude that the skilled person has been deterred from following the straight teaching of the art. In the absence of substantiating facts and corroborating evidence he has merely speculated what the Board cannot sanction.

4.9 Therefore, in the Board's judgement, the subject-matter of claim 1 represents an obvious solution to the problem underlying the patent in suit.

5. As a result, the Appellant's III main request is not allowable as the subject-matter of claim 1 lacks inventive step pursuant to Article 56 EPC.

#### *Auxiliary request*

6. *Amendments (Article 123 EPC)*

The amendment made to claim 1 of that request in addition to those made to claim 1 according to the main request consists in incorporating the equivalent ratio of catalyst per polyisobutene of 0.005:1 to 0.6:1 from claims 12 and 13 as granted. Original claim 13 specifies a general range of 0.005:1 to 5:1 and

original claim 14 a preferred range of 0.05:1 to 0.6:1 included in that general range. Both endpoints of the claimed range of 0.005 and 0.6 being specifically named in the application as filed, this amendment does not generate any new subject-matter within the meaning of Article 123(2) EPC (see decision T 2/81, OJ EPO 1982, 394, point 3 of the reasons).

This amendment restricts the scope of the claims and, thus, of the protection conferred thereby, which is in keeping with the requirements of Article 123(3) EPC.

7. *Novelty*

In view of the considerations of the Board with respect to the main request indicated in point 3 above, the Board considers the requirements of Articles 54 EPC to be satisfied also with respect to claim of the auxiliary request.

8. *Inventive step*

Claim 1 according to the auxiliary request differs from claim 1 according to the main request exclusively in that the equivalent ratio of catalyst per polyisobutene is additionally indicated. At the oral proceedings before the Board the Appellant-Patentee submitted that this amendment was solely designed for restricting the scope of the claims and conceded that it did not contribute anything to inventive step.

Document (10) still represents the closest state of the art and the starting point in the assessment of inventive for the reasons given in point 4.2 above.

That document, on page 5, line 33, also describes the ratio of catalyst indicated in present claim 1. The solution proposed by the patent in suit to the problem as defined in point 4.5 above remains to be characterised exclusively by the use of a polyisobutene containing at least 70% of a methylvinylidene isomer.

The considerations concerning inventive step given in point 4.6 with respect to the main request are neither based on nor affected by the indication of the catalyst ratio. Therefore the conclusion drawn in point 4.9 *supra* with regard to the main request still applies for the auxiliary request, i.e. the subject-matter of claim 1 of that request is obvious and does not involve an inventive step.

9. In these circumstances, the Appellant's III auxiliary request is not allowable for lack of inventive step pursuant to Article 56 EPC as well.

**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:

N. Maslin

A. Nuss