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**D E C I S I O N**  
of 19 December 2000

**Case Number:** T 0210/98 - 3.3.3

**Application Number:** 87305376.3

**Publication Number:** 0250229

**IPC:** C08F 10/00

**Language of the proceedings:** EN

**Title of invention:**

Alpha-olefin polymerization catalyst system including an advantageous modifier component

**Patentee:**

AMOCO CORPORATION

**Opponent:**

BASF Aktiengesellschaft Patente, Marken und Lizenzen  
Shell Oil Company

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 56, 104(1)

**Keyword:**

"Costs - late withdrawal of requests - apportionment - equity (no) "

"Inventive step - non-obvious combination of known features"

**Decisions cited:**

G 0002/88

**Catchword:**

-



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Boards of Appeal

Chambres de recours

Case Number: T 0210/98 - 3.3.3

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.3  
of 19 December 2000

**Appellant:**  
(Proprietor of the Patent) AMOCO CORPORATION  
200 East Randolph Drive  
Chicago  
Illinois 60601 (US)

**Representative:**  
Ritter, Stephen David  
Mathys & Squire  
100 Grays Inn Road  
London WC1X 8AL (GB)

**Respondent 1:**  
(Opponent 1) BASF Aktiengesellschaft  
Patente, Marken und Lizenzen  
D-67056 Ludwigshafen (DE)

**Representative:** -

**Respondent 2:**  
(Opponent 2) Shell Oil Company  
One Shell Plaza  
Houston  
Texas U.S.A. (US)

**Representative:**  
Allard, Susan Joyce  
BOULT WADE TENNANT  
Verulam Gardens  
70 Gray's Inn Road  
London WC1X 8BT (GB)

**Decision under appeal:** Interlocutory decision of the Opposition Division  
of the European Patent Office posted  
29 December 1997 concerning maintenance of  
European patent No. 0 250 229 in amended form.

**Composition of the Board:**

**Chairman:** C. Gérardin  
**Members:** B. ter Laan  
V. Di Cerbo

## Summary of Facts and Submissions

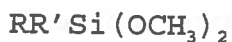
- I. Mention of the grant of European patent No. 0 250 229 in respect of European patent application No. 87 305 376.3, filed on 17 June 1987, claiming priority from two earlier applications in the U.S.A. (US 875185 of 17 June 1986 and US 55428 of 28 May 1987), was published on 15 May 1991 (Bulletin 91/20) on the basis of a set of nine claims containing three independent, partly overlapping claims. Claim 1 read:

"An olefin polymerization catalyst system comprising a solid, hydrocarbon-insoluble, magnesium-containing, titanium-containing, electron donor-containing component; an alkyl aluminum compound; and organosilane compound selected from diisobutyldimethoxysilane, diisopropyldimethoxysilane, t-butyltrimethoxysilane and di-t-butyldimethoxysilane."

Claims 2 to 7 referred to preferred embodiments of the catalyst system according to Claim 1.

Independent Claim 8 read:

"An olefin polymerization catalyst system comprising a solid, hydrocarbon-insoluble, magnesium-containing, titanium-containing, electron donor-containing component; an alkyl compound; and organosilane compound having a structure:



wherein R and R' are isobutyl-, isopropyl- or t-butyl-groups."

Independent Claim 9 read:

"An olefin polymerization catalyst system comprising a solid, hydrocarbon-insoluble, magnesium-containing, titanium-containing electron donor-containing

component; an alkyl aluminum compound; and organosilane compound selected from isobutyltrimethoxysilane and mixtures of isobutyltrimethoxysilane and diisobutyldimethoxysilane."

- II. On 12 February 1992 and on 17 February 1992 two Notices of Opposition against the granted patent were filed, in which the revocation of the patent in its entirety was requested on the grounds set out in Articles 100(a) (both Opponents) and 100(b) EPC (Opponent I).

The oppositions were, *inter alia*, supported by the following documents:

- D1 EP-A-0 231 878 and
- D17 JP-A-62/11706 (English translation filed on 18 February 1992).

- III. By a decision issued in writing on 29 December 1997 the Opposition Division maintained the patent in amended form. That decision was based on two sets of claims as the main request and one auxiliary request, which were both filed during the oral proceedings. The Opposition Division held that the main request did not comply with the requirements of Article 56 EPC, whereas the auxiliary request was found to be allowable.

Starting from D17 as the closest prior art document, the problem to be solved was defined as finding specific silicium compounds within the more general teaching of D17 that had an advantageous performance when used as an external electron donor, as compared to the external electron donors mentioned in D17. In view of the experimental report filed by Opponent I, that problem was considered not to be solved by the catalyst system according to Claim 1, so that the main request lacked an inventive step.

As regards the subject-matter of the auxiliary request, D17 was not a document to be considered for inventive step (Article 56 EPC, second sentence). The problem to be solved in the light of most of the cited documents was to provide an alternative catalyst system comprising components (A) and (B) as defined by Claim 1 of the auxiliary request, and as an external electron donor a specific organosilane having excellent performance. Since none of the cited documents suggested the use of that specific silane compound as an external electron donor, the claimed subject-matter was deemed inventive.

IV. On 25 February 1998 the Appellant (Proprietor) lodged an appeal against the above decision and paid the prescribed fee simultaneously. With the Statement of Grounds of the Appeal, which was filed on 5 May 1998, the Appellant submitted a main request (of four claims) and four auxiliary requests (of four, four, four and two claims, respectively).

With a letter dated 23 November 2000, the Appellant referred to the experimental results of 12 November 1996 and added further data in reaction to experiments filed by Respondent 1.

During the oral proceedings held on 19 December 2000, the Appellant withdrew its main, first and second auxiliary requests and continued to argue on the basis of the third auxiliary request as the new main request and the fourth auxiliary request as the new and only auxiliary request.

Claim 1 of the new main request reads:

"A process for polymerising  $\alpha$ -olefin characterized in that the polymerization is conducted in the presence of an olefin polymerization catalyst system comprising as

Component (A) a solid, hydrocarbon-insoluble, magnesium-containing, titanium-containing, electron donor-containing component; as Component (B) an alkyl aluminum compound; and as Component (C) an organosilane compound selected from diisobutyldimethoxysilane, diisopropyldimethoxysilane and isobutylisopropyldimethoxysilane, Component (C) being present as an external electron donor distinct from electron donor which is incorporated within the titanium containing component."

Claims 2 to 4 are directed to preferred embodiments of the process according to Claim 1.

Claim 1 of the auxiliary request is restricted to the use of diisobutyldimethoxysilane as an external electron donor.

V. In the written proceedings, Respondent 1 (Opponent 1), after having responded to the Statement of Grounds of Appeal with a letter filed on 17 November 1998, in a later submission dated 22 September 2000 referred to a new document and a new test report. Also, a second English translation of D17 was filed on 8 January 1999.

VI. The arguments of the Appellant can be summarized as follows:

- (a) The late filing by Respondent 1 of a new document as well as additional test results was objected to.
- (b) Since none of the documents, also not D1, mentioned all the features of present Claim 1, the subject-matter was novel.
- (c) Regarding inventive step, the patent involved the finding of alternatives to the phenyl silanes

habitually used as external electron donors. D17, which also concerned the replacement of older phenyl silanes, was regarded as the closest prior art. The problem to be solved was to find aliphatic silane compounds useful as an external electron donor, which satisfied the demanding requirements of industry, or, in other words, a catalyst system having high productivity and stereospecificity as well as good hydrogen sensitivity using an aliphatic silane compound as an external electron donor. From the examples in the patent specification as well as later filed data it could be seen that this problem was solved by the claimed subject-matter. The solution was not obvious since the broad scope of compounds described in D17 contained no incentive to use any of the proposed specific compounds. On the contrary, D17 taught to use preferably compounds having three alkyl groups emerging from the alpha carbon, thus teaching away from the present compounds. The other documents on file could also not render the claimed subject-matter obvious.

VII. The arguments of both Respondents (Opponents) in writing and during the oral proceedings can be summarized essentially as follows.

- (a) Respondent 1 explained the late filing of a new document and of additional experiments. A period of three months for the Appellant to reply to those filings was considered sufficient. It was also pointed out that the Appellant had taken a very long time to adapt the description after the decision of the first instance. The second translation of D17 was merely filed to avoid confusion since it was the copy used internally by Respondent 1.

Respondent 2 (Opponent 2) supported the arguments of Respondent 1 and additionally requested an apportionment of the costs made for the oral proceedings in view of the very late withdrawal of three sets of claims filed with the Statement of Grounds of Appeal.

(b) Respondent 1 maintained its novelty objection also in view of the new claims, on the basis of D1, which disclosed all the features of the subject-matter of present Claim 1.

(c) Regarding diisobutyldimethoxysilane, that compound was entitled to the earliest priority date so that D17 did not qualify as prior art. As to the other compounds, both Respondents agreed with D17 as the closest document, which referred to the same problem and disclosed similar organosilanes as the patent in suit. The problem underlying the patent in suit was to provide a catalyst system resulting in a high yield of polymers having high atacticity and low hexane extractables, as could be inferred from the patent specification as well as from the description as originally filed. However, an improvement of hydrogen sensitivity or melt flow ratio could not be deduced as part of the technical problem, since the description did not refer to this property at all and only a number of examples indicated the melt flow ratio.

No improvement regarding the catalyst systems of D17 was demonstrated. It was also not shown that the technical problem was solved over the full scope of the claim, because the additional experiments referred to a new problem, the hydrogen sensitivity or melt flow ratio. Furthermore, the disclosure of D17 provided an incentive for the skilled person to use the



compounds now being required, since they were very similar to those of D17 and provided merely an alternative. Therefore, the claimed subject-matter was not inventive.

VIII. The Appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of the claims of the main request or, alternatively, the claims of the auxiliary request, filed during the oral proceedings.

The Respondents requested that the appeal be dismissed.

### Reasons for the Decision

1. The appeal is admissible.

#### *Procedural matters*

2. From the Summary of Facts and Submissions it appears that the Board was confronted with a number of procedural problems:

- (i) the filing of late documents by Respondent 1,
- (ii) the filing of a late test report by Respondent 1 and
- (iii) the filing of a late test report by the Appellant.

As to the second translation of D17, the Board can see no reason to introduce it into the proceedings for the sole reason that this document seemed to be the one used internally by Respondent 1. Instead of avoiding confusion, it would, on the contrary, create confusion to have to refer to D17 in the form of two different translations. Since the correctness of the translation

actually on file had never been called in question by any of the parties, the second translation is disregarded (Article 114(2) EPC).

Regarding the new citation and experimental test report provided by the parties for the first time in the appeal proceedings, the Board invited the representatives to justify the relevance of that evidence in the light of the Reasons for the Decision given by the first instance and the arguments put forward so far in writing. It appeared that those late submissions would not contribute to clarify one or the other feature of the process for which the parties had opposite interpretations, so that there was no need to introduce either of the new citation and experimental test reports into the proceedings (Article 114(2) EPC).

*Amendments*

*The wording of the claims*

3. The Respondents did not object to the claims under Articles 123(2) and 123(3) EPC and the Board concurs with that view for the following reasons.
  - 3.1 The only independent Claim 1 of the main request differs from the three independent, partly overlapping Claims 1, 8 and 9 as originally filed in
    - (a) the category of the claim which has been changed from an olefin polymerization catalyst system to a process for polymerising  $\alpha$ -olefin in the presence of an olefin polymerization catalyst system,

- (b) the specification of the organosilane compound as being an external electron donor distinct from electron donor incorporated with the titanium containing component,
- (c) the definition of the organosilane compound as being selected from diisobutyldimethoxysilane, diisopropyldimethoxysilane and isobutylisopropyldimethoxysilane.

3.2 The number of dependent claims is now restricted to 3.

*Article 123(2) EPC*

3.3 Regarding the change of claim category, this amounts to the change of a product claim to a use claim. In the present case, the catalyst system which was originally claimed is now used to polymerise  $\alpha$ -olefins. Such a use is implied by the original wording of the claims: " An olefin polymerization catalyst system..." and also supported by the original description page 10, lines 3 to 23 as well as all the examples.

3.3.1 The organosilane compound being distinct from the electron donor incorporated with the titanium containing component is disclosed on original page 1, lines 21 to 25, and supported by the specific examples of electron donors useful in the preparation of the titanium-containing component, which do not include organosilanes (page 6, lines 1 to 30).

The term "external electron donor" as such has not been disclosed, but is an expression well-known in the art for an electron donor not forming part of the titanium-containing component, and having the same meaning as the "electron donor modifier" or

"cocatalyst modifier" used in the original description, e.g. page 1, lines 21, 26/27, 31; page 2, line 5 and page 9, line 32, as illustrated in all the examples.

3.3.2 The definition of the organosilane compound is supported by the disclosure in original Claim 1 and e.g. on page 2, lines 13/14, 29 and 35, and page 3, line 14, of the original description as well as Examples 2, 3, 5, 8, 11, 15, 22 (diisobutyldimethoxysilane), by Claim 1 and e.g. page 2, lines 14 and 32 and page 3, line 15/16 as well as Examples 18, 23 and 24 of the original description (diisopropyldimethoxysilane) and by page 3, line 10 of the original description (isobutylisopropyldimethoxysilane).

3.3.3 Apart from their formulation as process claims the dependent claims correspond to original Claims 2, 3 and 7, respectively.

3.3.4 In view of the above, the requirements of Article 123(2) EPC are satisfied.

*Article 123(3) EPC*

3.4 The change from a product claim to a use claim is one of the issues discussed in Decision G 2/88 (OJ EPO 1990, 93). According to a generally accepted principle, a claim to a product as such confers absolute protection upon such product, including all its uses. A claim to a particular use of a product encompasses that use as an additional technical feature, so that the scope of the claim is narrower than that of the original product claim as such.

3.4.1 Since the organosilane compounds are defined much more specifically than in Claims 1, 8 and 9 as

granted, the other amendments to the claimed subject-matter likewise amount to limitations of the scope of protection.

3.4.2 The dependent claims also do not introduce any broadening of the scope of the claimed subject-matter.

3.4.3 In view of the above, the requirements of Article 123(3) EPC are fulfilled.

#### *Article 84 EPC*

3.5 The amendments to the claims comply with the various requirements of Article 84 EPC. In particular, the definition of the catalyst (A), cocatalyst (B) and external electron donor (C) provides a clear and concise definition of the catalyst system and, thereby, of the process. Furthermore, the dependent claims, which correspond in substance to specific embodiments according to the examples, are adequately supported by the description. None of these points has been disputed by the Respondents.

#### *Novelty*

4. The only document cited against novelty was D1 which was filed on 28 January 1987 claiming priority from an earlier application in Japan (JP 19232/86), designating DE, FR, GB, IT and NL, and published on 12 August 1987 (Bulletin 87/33). Therefore, D1 is a document which is relevant for the assessment of novelty for the above indicated Contracting States pursuant to Article 54(3)(4) EPC. According to the same provisions it does not belong to the state of the art for AT, BE, CH, ES, LI, LU and SE.

4.1 D1 describes a catalyst for the polymerization of olefins, which comprises

(A) a solid catalyst component obtained by contacting

(i) a solid component comprising titanium, magnesium and a halogen as essential ingredients, said solid component having a polymer of an olefin deposited thereon in an amount of 0 to 50 g per gram of the solid component, said polymer of olefin having been prepared by preliminary polymerization of the olefin over the solid component in the presence of an organoaluminum compound, with

(ii) a silicon compound represented by the following general formula:



wherein  $R^1$  stands for a branched hydrocarbon residue,  $R^2$  stands for a hydrocarbon residue which is the same as or different from  $R^1$ ,  $R^3$  stands for a hydrocarbon residue, and  $n$  is a number of from 1 to 3, and

(B) an organoaluminum compound (Claim 1).

4.2 The solid catalyst component contains titanium, magnesium and halogen (Claim 1; page 5, line 26 to page 6, line 4) and has been prepolymerized in the presence of an organoaluminium compound (Claim 1; page 7, lines 34 to 37; page 8, lines 1 to 3). The solid component may additionally contain further components (page 6, lines 5 to 15) as well as an internal electron donor, such as oxygen- or nitrogen-containing compounds (page 6, lines 18 to 46). A polymeric silicon compound may also be present

(page 7, lines 8 to 23). The thus obtained component (i) is then contacted (page 10, lines 1 to 12) with component (ii), the silicon compound. Specific examples of the latter include diisobutyldimethoxysilane and sec-butyltrimethoxysilane (page 8, line 24 to page 9, line 55). In Example 1 tert-butylmethyldimethoxysilane is used (page 12, line 50). The contact takes place before the catalyst is used in polymerization. According to the examples, component (i) is washed before contacting it with the silicon compound. The so formed product is again washed to obtain component (A), which is then used for polymerization. Component (B) is added to the reactor as a cocatalyst, separately from component (A).

4.3 In short, component (i) is used in prepolymerization in the absence of silicon compound (ii), after which the prepolymerized, washed product is contacted with component (ii) in the absence of any polymerization reactants, which product again is washed and added to the main polymerization as the catalyst component (A), component (B) being added separately. It is clear that the silicon compound forms an integral part of the titanium-containing compound, component (A), and therefore cannot be regarded as an external electron donor. This is confirmed by D1, page 4, lines 39 to 42, where the advantages of not having to use an external electron donor are emphasized.

4.4 Claim 1 of the patent in suit, however, explicitly requires that the organosilane compound should be present as an external donor, hence added to the reactor separately from the titanium-containing catalyst component. Therefore, D1 does not take away the novelty of present Claim 1.

*Problem and solution*

5. The application in suit concerns an alpha-olefin polymerization catalyst system including an advantageous modifier component. Such catalyst systems are described in D1, which, as an intermediate document, cannot be taken into account for inventive step (Article 56 EPC, second sentence), and in D17, which the parties as well as the Opposition Division considered to be the closest document.
6. D17 is a Japanese patent application filed on 9 July 1985, published on 20 January 1987. Therefore, it is a prior art document for the subject-matter disclosed in the second priority claimed by the patent in suit, but it forms no part of the state of the art as regards the matter disclosed in the first priority document.
7. Accordingly, D17 can only be taken into account as regards the compounds diisopropyldimethoxysilane and isobutyldimethoxysilane, but not for diisobutyldimethoxysilane. The parties did not contest this point, nor did they cite any other document in support of an obviousness objection against the use of diisobutyldimethoxysilane as an external electron donor for a catalyst system as described in present Claim 1. Since the Board, in view of the documents on file, sees no reason to deviate from that view, the use of diisobutyldimethoxysilane as an external electron donor as specified in Claim 1 is considered to be inventive.
8. As regards both other compounds, however, D17 belongs to the state of the art. It describes a method of production of polyolefins by bringing olefin into



contact with a catalyst and then polymerizing, the catalyst being comprised of Component A, which is a solid component in which the essential ingredients are magnesium halide, titanium halide and electron donor, the latter being one or more substances selected from a number of specified compounds, Component (B), which is an organoaluminium compound, and Component (C), which is an organosilicon compound represented by the formula  $R^4R^{5}_{3-n}Si(OR^6)_n$  in which  $R^4$  is a branched hydrocarbon residue,  $R^5$  and  $R^6$  are branched or straight hydrocarbon residues and  $2 \leq n \leq 3$  (Claim).  $R^4$  should be branched from the carbon atom adjacent to Si. The branch should be alkyl, cycloalkyl or aryl. Preferably, the C adjacent to Si should be secondary or tertiary and 3 alkyls emerge from it. The number of carbon atoms of  $R^4$  is 3 to 20, preferably 4 to 10.  $R^5$  should be  $C_{1-20}$ , preferably  $C_{1-10}$ , and either branched or linear.  $R^6$  should be an aliphatic chain (page 8, "Organosilicon compound C"). Specific examples are e.g. tert-butylisopropyl-dimethoxysilane, tert-butyltrimethoxysilane and diisobutyldimethoxysilane, as well as a number of aromatic organosilanes (page 9). In the examples, tert-butylmethyldimethoxysilane (Examples 1 to 7), tert-butyltrimethoxysilane (Example 8), tert-butylisopropyldimethoxysilane (Example 12) and a number of other aliphatic and aromatic organosilanes are actually used.

8.1 The order in which catalyst components (A), (B) and (C) are combined is optional (page 9, second text paragraph). In the examples the components are added separately to the reaction mixture in the order (A), (B) and (C), so that the term "external electron donor" applies to component (C).

8.2 The object of D17 is to find an additive which provides high activity and stereoregularity,

eliminating the need for catalyst residue removal and extraction after polymerization (paragraph bridging pages 2 and 3). The silicon compounds defined in D17, which include both aromatic and aliphatic organosilanes, are said to have good performance and to result in industrially acceptable products, without requiring some of the cumbersome post-treatments made necessary in the prior art in order to eliminate specific additives or catalysts (page 2, paragraphs 4 and 5). Nothing is said about the undesirable effects of the use of aromatic organosilanes, especially the formation of benzene during the decompression stage of the polymerization process.

9. According to the patent specification, the object of the patent in suit is to find aliphatic silanes which perform better than other aliphatic silanes and in many instances as well as, or better than, aromatic silanes, in order to replace the latter, which have undesired side-effects, as external electron donors in catalyst systems for the polymerization of alpha-olefins (page 2, lines 16 to 24). To which properties the meaning of "better performance" relates can be deduced from the patent specification: a high polymer yield so that the polymer needs no removal of catalyst residues, a low level of stereo-random polymer (page 5, line 56 to page 6, line 1, examples) as well as sufficient bulk density and melt flow ratio (examples).

- 9.1 There has been considerable discussion about the formulation of the technical problem to be solved by the claimed subject-matter. In particular, it was disputed whether or not the aspect of melt flow ratio, in view of the original disclosure, was part of it. Also, the parties disagreed on the question whether or not the proposed compounds effectively

solved the technical problem defined in terms of improvement of the polymer properties, in particular in respect of the melt flow ratio.

9.2 The Respondents maintained that the application as originally filed contained no indication that melt flow ratio, or, in other words, hydrogen sensitivity, played any role in the performance of the catalyst. However, the Board is of the opinion that the general requirements for good catalyst performance do include that aspect, as is illustrated by the references to that property in the original description on page 12, lines 25 to 29, in Examples 15 to 24 and in Comparative Examples AA, BB, EE and HH to QQ. From those examples it can be seen that the organosilanes used as external electron donors in accordance with the claimed process produce polypropylene with a good balance of yield, extractables (crystallinity) and melt flow ratio. Therefore, the Board accepts the melt flow ratio as part of the technical problem to be solved.

9.3 In view of the conflicting interpretations of the original disclosure and the additional experiments by the parties regarding the formulation of the technical problem to be solved and the effects of the proposed organosilanes on the properties of the polymers produced, the Board takes the view that the technical problem may be seen in providing alternative aliphatic organosilanes suitable for use with a catalyst comprising a solid, hydrocarbon-insoluble, magnesium-containing, titanium-containing, electron donor-containing component and an alkyl aluminum compound, which result in a good yield and in desirable product properties such as high crystallinity and appropriate melt flow rate.

9.4 According to the patent in suit that problem is solved by the use of diisopropyldimethoxysilane or isobutylisopropyldimethoxysilane as external electron donors, as specified in Claim 1.

9.5 The examples in the patent in suit as well as the additional experiments filed during the proceedings demonstrate that the above-defined problem is effectively solved. In particular, the organosilanes used as external electron donors in accordance with the claimed subject-matter produce polyolefin with a good balance of yield, crystallinity and melt flow ratio.

10. It remains to be decided whether the claimed subject-matter is obvious having regard to the documents on file.

11. D17 discloses a whole range of aliphatic and aromatic organosilanes said to have good performance and to result in industrially acceptable products, which comply with the general formula  $R^4R^5_{3-n}Si(OR^6)_n$  in which  $R^4$  is a branched hydrocarbon residue,  $R^5$  and  $R^6$  are branched or straight hydrocarbon residues and  $2 \leq n \leq 3$ . Although diisobutyldimethoxysilane is mentioned as a possible compound, D17 states that  $R^4$  should be branched from the carbon atom adjacent to Si. The branch should be alkyl, cycloalkyl or aryl. Preferably, the C adjacent to Si should be secondary or tertiary and, in a preferred embodiment, 3 alkyls should emerge from it. The number of carbon atoms of  $R^4$  is 3 to 20, preferably 4 to 10.  $R^5$  can have 1 to 20, preferably 1 to 10, carbon atoms and can be branched or linear. The compounds exemplified in the formulae on page 9 (except diisobutyldimethoxysilane) as well as those actually used in the examples all fulfil the above requirements. From the examples it can be seen that the catalysts using aliphatic

organosilanes perform at the same level of activity, crystallinity and melt index as those using the aromatic ones. Therefore, there is a clear teaching that, in order to achieve similar performance as with aromatic organosilanes,  $R^4$  should be branched from the carbon atom adjacent to the silicon atom. Moreover,  $R^4$  is preferred to have at least 4 carbon atoms. As regards  $R^5$ , no preference is given apart from the number of carbon atoms. Therefore, there is no incentive for the skilled person to consider isopropyl or tertiary groups, hence no incentive use either of diisopropyldimethoxysilane or isobutylisopropyldimethoxysilane. The mere mentioning of diisobutyldimethoxysilane, a composition "very similar" to those now required, does not amount to a teaching of the combination of the specific features of the process without any reference to the properties to be achieved, in particular without any reference to the above-defined technical problem.

12. In view of the above considerations, the Board comes to the conclusion that also the part of Claim 1 relying on the second priority is unobvious, so that the subject-matter of Claim 1 as a whole involves an inventive step.
13. Since Claim 1 of the main request is allowable, the same is valid for dependent Claims 2 to 4, the patentability of which is supported by that of Claim 1.
14. As the main request is considered to be allowable, the auxiliary request need not be dealt with.

*Apportionment of costs*

15. Respondent 2 requested an apportionment of costs pursuant to Article 104(1) EPC as a reaction to the

withdrawal by the Appellant of its main, first and second auxiliary requests at the beginning of the oral proceedings. Respondent 2 based its request upon the fact that the preparation for dealing properly with the requests now withdrawn had been time-consuming and now proved to be in vain. The costs thus incurred could have been avoided if the Appellant had withdrawn its requests earlier.

15.1 The Board cannot concur with that view. It is normal that the parties prepare themselves thoroughly for oral proceedings. A change of views is one of the situations with which a professional representative may be confronted during oral proceedings and for which he or she should be prepared. Where it is no exception that requests are changed or withdrawn during oral proceedings as a result of the discussions held, no abuse of procedure can be seen in withdrawing the three requests at the beginning of the oral proceedings, apparently as a reaction to the convincing arguments of Respondent 2 brought forward in writing. Nor is it immediately clear that extra costs, going beyond those that had to be made during the taking of evidence or in order to prepare for the oral proceedings, had in fact been incurred and could have been avoided. The Respondent brought no evidence for that. Furthermore, no additional oral proceedings were caused to take place.

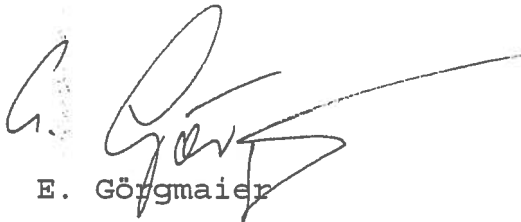
15.2 Therefore, the Board sees no reason to depart from the principle set out in Article 104(1) EPC according to which "Each party to the proceedings shall meet the costs he has incurred..." and to order a different apportionment of costs for reasons of equity. It follows that the request by Respondent 2 for an apportionment of costs is rejected.

**Order**

**For these reasons it is decided that:**


1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent on the basis of the set of claims submitted as main request during the oral proceedings.
3. The request for apportionment of costs is rejected.

The Registrar:



E. Görgmaier

The Chairman:



C. Gérardin

