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**INTERLOCUTORY DECISION  
of 18 November 2003**

**Case Number:** T 1131/01 - 3.3.3

**Application Number:** 94110168.5

**Publication Number:** 0633272

**IPC:** C08F 10/02

**Language of the proceedings:** EN

**Title of invention:**

Supported catalysts for the polymerization of olefins

**Patentee:**

Basell Technology Company B.V

**Opponent:**

Univation Technologies, LLC

**Headword:**

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**Relevant legal provisions:**

EPC Art. 54

**Keyword:**

"Novelty - main request (no) - interpretation of feature -  
auxiliary request (disclaimer) - proceedings wait for G 1/03  
and G 2/03"

**Decisions cited:**

G 0001/03, G 0002/03, T 0323/97, T 0507/99, T 0451/99

**Catchword:**

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Case Number: T 1131/01 - 3.3.3

**INTERLOCUTORY DECISION**  
of the Technical Board of Appeal 3.3.3  
of 18 November 2003

**Appellant:** Basell Technology Company B.V.  
(Proprietor of the patent) Hoeksteen 66  
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**Respondent:** Univation Technologies, LLC  
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**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office issued  
20 June 2001 and posted 17 August 2001  
concerning maintenance of European patent  
No. 0633272 in amended form.

**Composition of the Board:**

**Chairman:** R. Young  
**Members:** P. Kitzmantel  
R. Moufang

## Summary of Facts and Submissions

I. Mention of the grant of European patent No. 0 633 272 in respect of European patent application No. 94 110 168.5 in the name of SPHERILENE S.r.l. (now BASELL TECHNOLOGY COMPANY B.V.), which had been filed on 30 June 1994 claiming an IT priority of 7 July 1993, was announced on 17 September 1997 on the basis of 21 claims, Claim 1 reading as follows:

"1. A supported catalyst for the polymerization of olefins, comprising:

(A) a porous organic support functionalised with groups having active hydrogen atoms;

(B) at least one organo-metallic compound of aluminium containing at least one heteroatom selected from oxygen, nitrogen and sulphur; and

(C) at least one compound of a transition metal selected from those of groups IVb, Vb or VIb of the Periodic Table of the Elements, containing at least one ligand of the cyclopentadienyl type."

II. Notice of Opposition requesting revocation of the patent in its entirety on the grounds of Article 100(a) and (b) EPC was filed by Univation Technologies LLC on 17 June 1998.

The opposition was *inter alia* based on documents

D1: EP-A-0 563 917 and

D2: EP-A-0 598 543.

III. By its interlocutory decision announced orally on 20 June 2001 and issued in writing on 17 August 2001, the Opposition Division held

(a) that the subject-matter of the (then) main request did not comply with the requirements of Article 54 EPC, but

(b) that the requirements of the EPC were met by the patent as amended according to the claims of the (then) first auxiliary request.

IV. Claim 1 of the said main request differed from its granted version by two features in section (A) as emphasised in the following quotation:

"(A) a porous organic **polymer** support functionalised with groups having active hydrogen atoms, **having a porosity (B.E.T.) higher than 0.2 cm<sup>3</sup>/g;**" (emphasis added).

V. In the Opposition Division's view, the subject-matter of this Claim 1 was anticipated under Article 54(3) EPC by documents D1 (prior art for all designated contracting states except for DK) and D2 (prior art for the designated contracting states DE, FR, GB, IT and NL) because both documents disclosed supported metallocene/aluminoxane catalysts comprising porous supports made from polyamides and polycarbonates which met all features of Claim 1 of the main request including, in particular, the feature "polymer support functionalised with groups having active hydrogen atoms".

This conclusion resulted from the fact that the aforementioned feature was considered to embrace polymers which (only) **showed** functional groups having active hydrogen atoms and thus included polyamides comprising "functional" amide groups within the polymer chain as well as polycarbonates having terminal "functional" hydroxyl groups, because these "functional" groups contained active hydrogen atoms.

- VI. On 16 October 2001 the Patentee (Appellant) lodged an appeal against the decision of the Opposition Division and paid the appeal fee on the same day. The Statement of Grounds of Appeal was filed on 19 December 2001.

Therewith the Appellant resubmitted as its main request Claims 1 to 21 of the main request underlying the decision under appeal (cf. sections I and IV above) and additionally filed, as auxiliary request, a further set of 21 claims identical to the main request but for the following proviso in the definition of component (A) of Claim 1:

"(A) a porous organic polymer support functionalised with groups having active hydrogen atoms, having a porosity (B.E.T.) higher than 0.2 cm<sup>3</sup>/g, **polyamides and polycarbonates being excluded;**" (emphasis added).

- VII. The arguments of the Appellant presented in the written submissions and at the oral proceedings held on 18 November 2003 may be summarized as follows:

- (a) In the Appellant's view, the word "functionalised" in the context of the feature of Claim 1 "porous organic polymer support functionalised with active hydrogen atoms" was to be regarded as a product-by-process feature, i.e. was intended to characterise a "standard" polymer which had been modified to bear groups having active hydrogen atoms alien to said "standard" polymer.
- (b) "Standard" polyamides and polycarbonates, like those disclosed in D1 and D2, which only "showed" functional groups having active hydrogen could not therefore be regarded as polymers functionalised with groups having active hydrogen.
- (c) This resulted from the chemical structure of these "standard" polymers as outlined in documents
- D33: Kirk-Othmer "Encyclopedia of Chemical Technology", Vol. 19, pages 454 to 457, and
- D34: Kirk-Othmer "Encyclopedia of Chemical Technology", Vol. 19, pages 584 to 586.
- (d) In support of the argument that a functionalised polymer was a "standard" polymer modified in order to comprise pending functional groups the Appellant furthermore submitted new documents D35 to D44.
- (e) This interpretation of the word "functionalised" was also in line with the following disclosure of the patent in suit:

- (i) The use in the statements on page 2, lines 53 to 58 of the term "functional group" referring to groups which had been introduced by "functionalisation-modification";
- (ii) The reference on page 3, lines 4 to 17 to the preparation methods of the preferred functionalised, partially cross-linked styrenic polymers, either by "functionalisation-modification" of a precursor polymer made from a styrenic monomer and a cross-linkable comonomer or by direct copolymerisation of styrenic monomers with comonomers functionalised with groups containing active hydrogen atoms;
- (iii) The indication on page 8, lines 29 to 31 of methods for the qualitative and quantitative determination of functional groups, which, in the Appellant's view, would be unnecessary if the presence and amount of functional groups having active hydrogen atoms were known as intrinsic properties of "standard" polyamides and polycarbonates;
- (iv) The same conclusion applied to the statement on page 3, lines 1 to 3 of the patent specification which referred to a minimum amount of functional groups.

- (f) The Appellant denied the validity of the argument that, in view of the jurisprudence of the EPO, the product-by-process character of the word "functionalised" made "standard" polyamides and polycarbonates indistinguishable from **structurally identical** polyamides and polycarbonates which had been prepared by appropriate "functionalisation-modification" of "precursor" polymers, because, in its view, the skilled person would not consider such **structurally identical** polyamides and polycarbonates as "functionalised" polymers.
- (g) Consequently, the subject-matter of the main request was novel over documents D1 and D2.
- (h) For the reasons given in the decision under appeal for the allowability of the then first auxiliary request the subject-matter of the main request also involved an inventive step.
- (i) In the event that the novelty objection of the decision under appeal against the subject-matter of the main request was maintained, novelty could be established, in the Appellant's view, by the exclusion of polyamides and polycarbonates from the support materials to be used according to Claim 1 of the auxiliary request.
- (j) In view of the fact that the issue of the allowability of a disclaimer which was not based on the application as filed was pending before the Enlarged Board of Appeal, the Appellant agreed that the present appeal proceedings be stayed until a decision is rendered by that body in the



respective cases G 1/03 (referring to T 507/99, OJ EPO 2003, 225) and G 2/03 (referring to T 451/99, OJ EPO 2003, 334).

VIII. The arguments of the Respondent/Opponent submitted in its letter dated 4 July 2002 and at the oral proceedings may be summarised as follows:

- (a) The sole question that needed to be decided with regard to the issue of novelty vis-à-vis D1 and D2 was whether the polymer supports disclosed in these documents met the feature of Claim 1 "organic polymer support functionalised with groups having active hydrogen atoms". All other features of Claim 1 of the main request were clearly anticipated by D1 and D2.
- (b) The interpretation of this feature was to be made on the basis of the content of the specification of the patent in suit itself. Support in this exercise contained in the newly cited textbook excerpts D33 and D34 was accepted by the Respondent, whereas the further newly cited documents D35 to D44 should, in its view, be excluded from consideration for lack of relevance.
- (c) Considering the standard rules of the English language the word "functionalised" in that feature could only be interpreted to mean that the polymer support **possessed** groups having active hydrogen atoms.

- (d) There could be no doubt that the polyamides and polycarbonates disclosed as support materials in D1 and D2 met this requirement because their active hydrogen atoms could be quantitatively determined by the method suggested in the patent in suit, i.e. by gas-volumetric measurement after reaction with aluminium triethyl.
  
- (e) This test could not, therefore, support the Appellant's assertion that the claimed invention only covered polymer supports whose active hydrogen atoms were situated on pendant groups, and excluded polymers whose active hydrogen atoms were situated on the polymer backbone or in terminal position.
  
- (f) Since this could only lead to the conclusion set out in sub-section (c) above, there was no need to investigate whether polyamides and polycarbonates disclosed in D1 and D2 could be conceived as "functionalised" polymers, i.e. as polymers resulting from some modification of, respectively, a "standard" polyamide or "standard" polycarbonate which did not comprise functional groups other than those constituting the "genuine" polymer structure.
  
- (g) However if this issue should become decisive then it was to be considered that even "ordinary" polyamides and polycarbonates could, at least theoretically, be regarded as products of a modification of a precursor polymer, eg by addition of further repeating units to a "precursor" polyamide or end-capping of a

"precursor" polycarbonate with (possibly backbone-identical) terminating monomers. A possible product-by-process interpretation of the word "functionalised" could not therefore provide novelty because its process character was not so as to make the resulting polymer distinguishable from "non-functionalised" polymers.

- (h) The main request must therefore be refused for lack of novelty of the subject-matter of Claim 1 over D1 and D2.
- (i) In the Respondent's view, the auxiliary request was not allowable (1) because the proviso in Claim 1 was not sufficiently strictly based on the respective disclosures of D1 and D2 as was required for a disclaimer, and (2) because it was not supported by the application as filed and therefore contravened Article 123(2) EPC as had been held in T 323/97 (OJ EPO 2002, 476).
- (j) Moreover, until now it had not been established that the subject-matter of Claim 1 of the auxiliary request without the disclaimer enjoyed the claimed priority; in the Respondent's view, it was incumbent on the Appellant to show that all positive features of this amended claim found support in the claimed combination in the priority document.
- (k) In view of the referral to the Enlarged Board of Appeal of the issue of the allowablity of disclaimers which are not based on the original disclosure, the Respondent agreed that, for a

decision on the novelty of the subject-matter of the auxiliary request, the case should be stayed.

IX. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the claims of the main request or of the auxiliary request both filed on 19 December 2001.

The Respondent requested that the appeal be dismissed or, if not, the proceedings be suspended pending decision of the Enlarged Board of Appeal on disclaimers, and the Board consider submitting a question to the Enlarged Board: "If in a claim an amendment is made which does not find basis in the specification as filed and in the priority document, is the claim to priority then validly maintained for that claim?", and if the first auxiliary request is not refused, then the case be remitted to the first instance for examination of inventive step.

## **Reasons for the Decision**

1. The appeal is admissible.

### *Main request*

2. *Novelty*

2.1 Document D1 (prior art for all designated contracting states except for DK)

This document relates to a supported polymerisation catalyst, which can be prepared by reacting a reaction product formed from an aluminoxane and at least one metallocene with a microporous, polymeric support whose pore volume is at least 50% by volume, based on the total volume of the support material, possibly consisting of polyamide or polycarbonate (Claims 1, 2, 4).

Example 6 (page 16) describes the preparation of a catalyst by impregnation of an Accurel-PA-6 powder with a solution of zirconocene and methylaluminoxane.

According to page 3, lines 29 to 32 the metallocenes are compounds of metals of the groups IVB, VB and VIB of the Periodic Table and the examples set out on page 11, line 34 to page 12, line 28 all comprise ligands of the cyclopentadienyl type.

- 2.2 Document D2 (prior art under Article 54(3) EPC for the designated contracting states DE, FR, GB, IT and NL)

This document discloses a process for preparing  $\alpha$ -olefin polymers in the presence of a solid catalyst comprising an organic porous polymer (component (i)) supporting certain organic aluminium-oxygen compounds, typically aluminoxanes (component (ii)), and a compound of a transition metal of the groups IVB to VIB of the Periodic Table having at least one conjugated 5-membered cyclic ligand, eg a cyclopentadienyl group (component (iii)), the polymer support having an average particle diameter of 5 to 1,000  $\mu\text{m}$ , in which the total pore volume of all pores whose diameter is 0.006 to 10  $\mu\text{m}$  is no smaller than 0.3  $\text{cm}^3/\text{g}$ , and the

total pore volume of all pores whose diameter is 0.05 to 2 µm is no smaller than 50% of the total pore volume of all pores whose diameter is 0.006 to 10 µm (Claims 1, 10; page 6, lines 27 to 37; page 4, lines 32 to 40; page 7, line 7 to page 9, line 27).

Among the polymers to be used as support materials are polyamide and polycarbonate (page 4, lines 16 to 24).

- 2.3 The Appellant has not contested the conclusions drawn in sections 5.3.1 and 5.3.2 of the Reasons of the decision under appeal with regard to the anticipation by D1 and D2 of all features of Claim 1 except for the feature of Claim 1 "organic polymer support functionalised with groups having active hydrogen atoms".

Since the Board sees no reason to depart from this finding, the only outstanding issue is that of the alleged anticipation also of the afore-mentioned feature by the disclosure of D1 and/or D2.

- 2.4 The resolution of this issue essentially depends on the meaning of this feature and in particular on the interpretation of the word "functionalised" in it.
- 2.5 In the Board's judgment, this word is to be interpreted according to its significance as a descriptive participle. I.e. the meaning of the feature "functionalised with groups having active hydrogen atoms" is synonymous to the meaning of "polymer support containing functional groups having active hydrogen atoms".

- 2.6 This interpretation is on the one hand in line with the plain reading of the passage "organic polymer support functionalised with groups having active hydrogen atoms" and on the other hand also in agreement with the statement on page 2, lines 53 to 55 of the patent specification "Supports which can be used ...are those polymers, ..., which show functional groups having active hydrogen atoms".
- 2.7 In view of the straightforwardness especially of the latter statement in the patent specification itself, there is no need to resort to information outside this specification for the interpretation of the passage "polymer support containing functional groups having active hydrogen atoms". Documents D35 to D44, newly cited by the Appellant with the Statement of Grounds of Appeal, are therefore not considered in this decision.
- 2.8 The conclusion drawn in section 2.6 above is not invalidated by the references in the specification mentioned by the Appellant.
- 2.8.1 There is no information in the specification suggesting that the preparation methods of the preferred functionalised, partially cross-linked styrenic polymers set out on page 3, lines 4 to 17 should be considered as a model intended to illustrate the meaning of the word "functionalised".

Moreover, while the first functionalisation method referred to in the afore-mentioned passage by appropriate after-treatment of a styrene/divinylbenzene copolymer is in agreement with the Appellant's view that a "functionalised" polymer support is a support

prepared by "functionalisation-modification" of a non-functionalised polymer, the second functionalisation method by copolymerisation of styrene with already functionalised comonomers is in line with the interpretation that the word "functionalised" covers polymer supports just "showing" functional groups by themselves.

- 2.8.2 Nor is the Appellant's case supported by the references on page 3, lines 1 to 3 of the patent specification to a generally applicable minimum amount of 0.2 meq of functional groups and on page 8, lines 29 to 31 to methods for the qualitative and quantitative determination of functional groups.

It is true that especially the low minimum amount of functional groups required points to polymers whose functional groups are different from its repeating units which constitute the polymer backbone because the amount of functional groups of such polymers, depending on their molecular weight, is normally much higher.

However, this does not contradict the interpretation of the term "polymer support functionalised ..." as "polymer supports showing functional groups ..." (see section 2.5 above) because this interpretation also comprises the variant that the polymer support is constituted by a polymer backbone having eg pendant functional groups which have been introduced into the polymer by "functionalisation-modification".



There is thus no inconsistency between information in the patent specification directed to some preferred "functionalised polymer supports" having a low degree of functionalisation and the interpretation of the passage in Claim 1 "polymer supports functionalised with groups having active hydrogen atoms" as "polymer supports showing functional groups ...".

- 2.9 In view of the above considerations there is no need to decide the question whether the alleged interpretation of this passage by the Appellant which attributes a product-by-process character to the word "functionalised" could provide novelty over D1 and D2.
- 2.10 The subject-matter of Claim 1 is therefore anticipated by the disclosures of, respectively, D1 and D2.
- 2.11 The main request is thus refused.

*Auxiliary request*

3. The proviso in section (A) of Claim 1 of this request "polyamides and polycarbonates being excluded" is a disclaimer whose content goes beyond the content of the application as originally filed.
4. In view of the fact that the issue whether an amendment to a claim by the introduction of a disclaimer was unallowable under Article 123(2) EPC for the sole reason that neither the disclaimer nor the subject-matter excluded by it from the scope of the claim have a basis in the application as filed is pending before the Enlarged Board of Appeal (G 1/03 and G 2/03), the question whether or not the disclaimer incorporated

into Claim 1 of the auxiliary request meets the requirement of Article 123(2) EPC cannot be decided until the decision of the Enlarged Board of Appeal in cases G 1/03 and G 2/03 is known (cf. "Notice from the European Patent Office dated 1 August 2003 concerning disclaimers", OJ EPO 2003, 509).

Consequently, the proceedings will be continued in writing and the next procedural step will be taken by the Board after resolution of the cases G 1/03 and G 2/03 by the Enlarged Board of Appeal.

5. A decision concerning the Respondent's request to submit the question to the Enlarged Board if a claim comprising a disclaimer lacking a basis in the application as filed and in the priority document is entitled to the claimed priority is also postponed until after the Enlarged Board's decision in these cases because the conclusions to be arrived at in these referrals are very likely to have an impact on the endorsement or not of this request.

**Order**

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

1. The main request is refused.
2. The proceedings will be continued in writing on the basis of the first auxiliary request.

The Registrar:

The Chairman:

E. Görgmaier

R. Young