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D E C I S I O N
of 10 December 2002

Case Number: T 0952/99 - 3.3.3

Application Number: 92918021.4

Publication Number: 0647244

IPC: C08F 210/18

Language of the proceedings: EN

Title of invention:

Unsaturated ethylene - non conjugated diene copolymers and
preparation thereof by radical polymerization

Patentee:

Borealis Holding A/S

Opponent:

Union Carbide Corporation

Headword:

-

Relevant legal provisions:

EPC Art. 54, 84, 99(1), 104(1), 111(1), 123(2)(3)
EPC R. 29(1), 55(c)

Keyword:

"Form of appeal - admissible (yes)"
"Claims - clarity (yes)"
"Novelty - new use of known substance (yes)"
"Costs - apportionment (no)"

Decisions cited:

G 0002/88, G 0006/88, G 0009/91, G 0010/91, T 0105/87,
T 0796/91, T 0210/93, T 0279/93, T 0840/93, T 0401/95,
T 0577/97, T 0131/01

Catchword:

-



Case Number: T 0952/99 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 10 December 2002

Appellant:
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 27 July 1999
revoking European patent No. 0 647 244 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: R. Young
Members: W. Sieber
 U. Tronser

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 647 244, in respect of European patent application No. 92 918 021.4, based on International application PCT/SE92/00491, filed on 1 July 1992 and claiming a SE priority of 22 October 1991 (SE 9103077) was published on 4 December 1996 (Bulletin 1996/49). Claim 1 read as follows:

"1. Use of a polyunsaturated compound having a straight carbon chain which is free from heteroatoms and has at least 8 carbon atoms and at least 4 carbon atoms between two non-conjugated double bonds, of which at least one is terminal, as comonomer in the production by radical polymerisation at a pressure of 100-300 MPa and a temperature of 80-300°C and under the action of a free radical initiator of an unsaturated ethylene copolymer of ethylene and at least one monomer which is copolymerisable with ethylene and includes the polyunsaturated compound, said polyunsaturated compound comprising 0.2-3% by weight of the ethylene copolymer."

Claims 2 to 9 were dependent claims directed to elaborations of the subject-matter of Claim 1.

II. A Notice of Opposition was filed on 4 September 1997, on the grounds of Article 100(a) EPC (lack of novelty and lack of inventive step). The opponent had cited - *inter alia* - the following documents:

- D1: FR-A-2 660 660;
- D2: "7. Mechanism of free-radical polymerisation of ethylene" from "Crystalline Olefin Polymers", R. Raff and K.W. Doak, John Wiley and Sons, Inc., New York 199, pages 267 to 300;
- D3: "Ethylene Polymers", Encyclopaedia of Polymer Science and Technology, Revised Edition, vol. 6, 1986, pages 394 to 395;
- D4: US-A-3 627 723;
- D5: US-A-3 919 358;
- D6: US-A-3 941 859;
- D7: US-A-4 046 840;
- D9: US-A-4 210 579.

III. During prosecution of the case before the opposition division, amended sets of claims were filed by the proprietor, by way of a main request, auxiliary request I (later withdrawn), and auxiliary requests II to V. By a decision announced orally on 22 June 1999 and issued in writing on 27 July 1999, the opposition division revoked the patent because none of the requests met the requirements of the EPC.

- (i) The claims of the main request differed from the claims as granted only in that the "unsaturated ethylene copolymer" mentioned in Claim 1 (line 4, published version) was indicated to be an "unsaturated *cross-linkable* ethylene copolymer".

(ii) Each Claim 1 of auxiliary requests II to V was in principle based on elements from granted Claims 1 and 3. In addition, however, the claims were considerably recast which led in Claim 1 of auxiliary requests III and IV as far as a change of category, ie to a composition claim.

The decision considered the subject-matter of Claim 1 of the main request, although in the form of a use claim, to be equivalent to a process for the copolymerisation of ethylene with at least one polyunsaturated compound in the presence of a free radical initiator which overlapped at least to some extent with the process described in D1. Although the polyunsaturated compound in D1, eg 1,9-decadiene, was used as a chain transfer agent, the decision held that the different mode of action did not necessarily result in a new technical effect as outlined in G 2/88 and G 6/88 (OJ EPO 1990, 93 and OJ EPO 1990, 114). Moreover, it was not allowable for reasons of lack of novelty to re-claim the same process if a reactant was found to act in a way not previously known. Reference was made to T 210/93 (12 July 1994) and T 279/93 (12 December 1996), neither published in the OJ EPO.

As regards auxiliary requests II to V, it was held that the claims did not meet the requirements of Article 123(2) EPC. Furthermore, auxiliary requests III and IV contravened Article 123(3) EPC since the claim category had been changed from a "use claim" to a "composition claim". In addition, auxiliary request V did not meet the requirements of Articles 123(3) and 84 EPC.

IV. On 27 September 1999, a Notice of Appeal against the above decision was filed by the proprietor (hereinafter referred to as the appellant), the prescribed fee being paid on the same day.

With the Statement of Grounds of Appeal, filed on 25 November 1999, the appellant submitted a set of amended Claims 1 to 6 in order to meet the novelty objection in the decision under appeal. According to the appellant, the subject-matter of these claims was also inventive over D1, alone or in combination with D2 and D3. To demonstrate the surprising advantages of the claimed subject-matter, in particular line speed, comparative graphs (Enclosure 3) were filed. As regards D4 to D7 and D9, the appellant argued that these documents had not been used as a basis for opposition according to Rule 55(c) EPC since they had only been listed in the Notice of Opposition without giving any reasons as to their relevance. Consequently, these documents should be disregarded.

- V. With a submission received 17 April 2000, the opponent (hereinafter referred to as the respondent) objected against the filing of amended claims and requested that the appeal be declared inadmissible in view of the radical alteration of the scope of the amended claims. Furthermore, full payment of all of its costs involved in the appeal was requested. As regards the merits of the appeal, the respondent objected against amended Claims 1 and 2 under Articles 84, 123(3) and 56 EPC. A new document

D10: US-A-3 190 862

was submitted to support the argumentation on inventive step.

- VI. In a communication (6 February 2002) accompanying a summons to oral proceedings, the board gave a positive preliminary, provisional opinion on the admissibility of the appeal in general, but raised objections under Article 123(3) EPC against amended Claims 1 and 2.

VII. In reply, the respondent (30 April 2002) objected as a precautionary measure against the filing of a fresh set of claims which seemed likely in view of the board's preliminary, provisional opinion. In view of that, it saw no chance of formulating its submissions for the oral proceedings, or for carrying out any further searching which might be required as a result of features included in the claims which had not been present in the claims considered by the opposition division. Furthermore, the respondent requested that the case be remitted to the opposition division if issues were to be discussed which had not been considered previously, in particular inventive step.

VIII. Prior to oral proceedings, the appellant filed on 2 May 2002 a new main request (Claims 1 to 6) and auxiliary request I (Claims 1 to 6). The arguments presented can be summarized as follows:

- (a) New Claim 1 of the main request was neither objectionable under Article 84 EPC nor under Article 123(3) EPC since it was a mere combination of granted Claims 1 to 4.
- (b) Compared with the main request, Claim 1 of auxiliary request I contained an additional feature describing the position of the non-reacted double bonds. Since this feature was explicitly disclosed in the granted patent on page 3, lines 34 to 35, Claim 1 of the auxiliary request met the requirements of Article 123(2) EPC.
- (c) As regards inventive step, the respondent repeated its position that D4 to D7 and D9 had to be regarded as not being in the proceedings. Apart from that, these documents were of no

relevance for the assessment of inventive step. Since D10 was filed late and *prima facie* not relevant, this document should not be allowed into the proceedings.

- (d) Further technical information concerning the graphs of Enclosure 3 was submitted including the Article "XLPE Compound for Fast Cable Line Speed" from which the graphs of Enclosure 3 had been taken.

IX. First oral proceedings were held on 5 June 2002, where the admissibility of the appeal and the allowability of the requests submitted with appellant's letter of 2 May 2002 were discussed. In view of this discussion, the appellant filed a new main request and revised and/or new auxiliary requests I to III in the late afternoon.

- (i) The main request contained only one claim which read as follows:

"Use of a polyunsaturated compound having a straight carbon chain which is free from heteroatoms and has at least 8 carbon atoms and at least 4 carbon atoms between two non-conjugated double bonds, of which at least one is terminal, as comonomer in the production by radical polymerisation at a pressure of 100-300 MPa and a temperature of 80-300°C and under the action of a free radical initiator of an unsaturated ethylene copolymer of ethylene and at least one monomer which is copolymerisable with ethylene and includes the polyunsaturated compound, said ethylene copolymer comprising 0.2-3% by weight of said polyunsaturated compound and cross-linking the originally unsaturated ethylene copolymer."

- (ii) Claim 1 of auxiliary request I, comprising 5 claims, differed from Claim 1 of the main request in that it included, at the end of the claim, the further requirement:

"... and including the ethylene copolymer in compositions for insulating layer material, semiconductor-layer material or sheath material for electric cables or compositions for tubes."

Dependent Claims 2 to 5 corresponded to Claims 5 to 8 as granted.

- (iii) Auxiliary request II differed from auxiliary request I in that the order of crosslinking and further use at the end of Claim 1 had been reversed to:

"... and including the ethylene copolymer in compositions for insulating layer material, semiconductor-layer material or sheath material for electric cables or compositions for tubes and cross-linking the originally unsaturated ethylene copolymer."

- (iv) Auxiliary request III differed from auxiliary request I in that Claim 1 contained the following further requirement (after the words "... comprising 0.2-3% by weight of said polyunsaturated compound"):

"... and the non-reacted double-bonds be positioned at the end of short branches at the site of the polymer chain where the polyunsaturated compound was incorporated by polymerisation"

X. At the end of the oral proceedings, the following requests remained:

The appellant requested that

- the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the claim submitted as main request at the oral proceedings held on 5 June 2002; or in the alternative,
- on the basis of the claims submitted as auxiliary requests I to III at the oral proceedings held on 5 June 2002;
- in the event of the main request not being allowed, the following question be referred to the Enlarged Board of Appeal:

"If use claims are to be regarded as falling into the same category as product (*sic*) claims should then not be a combination of use claims defining a sequence of steps be equally allowable as a combination of process claims stating the same sequence of such steps";

- the request for apportionment of costs be rejected.

The respondent's requests, as far as they were relevant at this stage of the proceedings, could be summarized as follows:

- rejection of the appeal as inadmissible;
- if the board considered the appeal admissible, the appeal be dismissed;
- apportionment of costs.

After deliberation, the chairman of the board informed the parties that the appeal was admissible and the main request filed at the oral proceedings was admitted for consideration. As regards the auxiliary requests on file, they were not yet admitted into the proceedings. At the same time, it was announced that D10 was introduced into the proceedings (Article 114(1) EPC), and that the proceedings were to be continued in writing.

XI. With a communication of 25 June 2002, the board summoned the parties for further oral proceedings.

XIII. On 29 July 2002, the appellant filed revised pages 2 to 5 of the specification which should form the basis for maintaining the patent according to the main request together with pages 6 to 11 and 14 of the specification as granted.

As regards the claim of the main request, the appellant argued that the claim not only met the requirements of Articles 123(2) and (3) and 84 EPC, it was also novel over the cited documents, in particular D10 which disclosed only methyl-substituted diolefins excluded by the wording of the claim of the main request. Furthermore, D10 did not contain any disclosure of a process where, in a first step, an unsaturated ethylene copolymer was produced which was then, in a second step, crosslinked. As regards inventive step in view of the other documents, the appellant repeated its arguments already on file.

XIII. In a letter filed 5 November 2002, the respondent submitted that the new main request should be dismissed since the claim was not clearly allowable as required by the case law. The claim was objectionable at least under Articles 84 and 54 EPC. The heterogeneous combination of an initial technical use followed by a crosslinking step, entirely unrelated to the initial use, rendered the claim fundamentally unclear. As to novelty, the relevant documents were D1 and D10. To support its argument that the polymers produced in these documents were inevitably crosslinked, the respondent filed the following documents:

D11: "The Chemistry of High Polymers" by
C. E. H. Bawn, Interscience Publishers Inc.,
New York, 1948, pages 55 to 57;

D12: "Principles of Polymer Chemistry" by P. J.
Flory, Cornell University Press, Ithaca, New
York, 1967, pages 260 to 263 and 386 to 390; and

D13: Die Angewandte Makromolekulare Chemie, 63
(1977), 215 to 232 (Nr. 943).

XIV. In a letter filed 25 November 2002, the appellant rejected the respondent's objections against the claim. In particular, it was pointed out that the term "compound having a straight carbon chain" used in the claim was a clear scientific term meaning that the carbon atoms were in one straight chain, in contrast to branched carbon chains. In this context, reference was made to "Organic Chemistry", K.P.C. Vollhardt/N.E. Schore, second edition, 1994, page 45. Furthermore, it was requested that the newly cited documents D11 to D13 should not be admitted into the proceedings.

XV. The second oral proceedings were held on 10 December 2002.

The respondent raised no objection under Article 123 EPC against the claim of the main request, but maintained its objection under Article 84 EPC against the unclear mixture of technical use and process steps in the claim. Furthermore, it objected against the rewording of that part of the claim relating to the amount of polyunsaturated compound in the ethylene copolymer. Although caused by the poor use of the word "comprising" in granted Claim 1, this amendment was an unallowable tidying up of the claim. Having regard to novelty, both D1 and D10 not only disclosed the use of a polyunsaturated compound as a comonomer but also disclosed inherently the subsequent crosslinking of the formed copolymer. It was common general knowledge that at least some crosslinking would occur under the process conditions described in D1 and D10. D11 to D13, cited to support this common general knowledge were, however, not admitted into the proceedings.

The appellant pointed out that neither D1 nor D10 contained an explicit disclosure of a crosslinking step. Since furthermore, crosslinking was generally dependent upon a large number of factors, including the presence or absence of antioxidants or stabilizers, it could not be said that crosslinking occurred inevitably under the conditions of D1. As regards inventive step, the appellant repeated its position that this issue was not in the proceedings, and the board would make a procedural error when introducing this ground of opposition, either by discussing it during these oral proceedings or by remitting the case to the opposition division to decide on this issue.

XVI. At the end of the second oral proceedings the following requests remained:

The appellant requested that

- the decision under appeal be set aside, and the patent be maintained as amended on the basis of the claim as filed at the end of the oral proceedings on 5 June 2002 (main request); having regard to amended pages 2 to 5 submitted with letter of 29 July 2002, their filing was deferred; or, in the alternative,
- to continue the proceedings according to the other requests in the order stated in the Minutes of the oral proceedings of 5 June 2002 (see point X).

The respondent requested that

- the appeal be dismissed in its entirety;
- if the appeal were not dismissed that the case be remitted back to the opposition division for consideration of inventive step for the claim of the main request;
- if the appeal were not dismissed and the case were not remitted that the appellant's main request and auxiliary requests be refused on the ground that there is no clearly allowable specification on file;
- apportionment of costs at the board of appeal's discretion.

Reasons for the Decision

1. *Admissibility of appeal*

1.1 The respondent requested that the appeal be declared inadmissible because the appellant had not given any reasons as to why the decision taken by the opposition division was incorrect. It should not be allowed that the appellant introduced amended claims of considerably altered scope which had not been considered by the opposition division, which, in the end, would render the entire proceedings before the opposition division meaningless.

1.2 Whilst it is true in the present case that the Statement of Grounds of Appeal makes no criticism of the reasoning in the decision under appeal, whether in relation to its interpretation of Claim 1 of the patent in suit, or its finding of lack of novelty on the basis of that interpretation, this is not itself necessarily a bar to the admissibility of the appeal, since the appellant has attempted to deal with the grounds of the decision of the first instance by filing amended claims and submitting reasons for the patentability of such claims.

According to T 105/87 (25 February 1988, point 1 of the reasons; not published in the OJ EPO), an appellant has sufficiently dealt with the ground of the decision of the first instance by limiting the subject-matter of the claim and by submitting reasons for the patentability of such a claim. In the present case, the appellant acted according to the principle considered to be allowable in T 105/87 by filing

amended claims with the Statement of Grounds of Appeal. Thus, the respondent's demand for literally dealing with the reasons of the decision under appeal goes beyond what has been held in the case law to be necessary.

- 1.3 Furthermore, admission of a new request put forward by a proprietor on appeal being not identical to the ones already before the opposition division is a matter of discretion of the appeal board. In the past, the practice of the boards of appeal on this has been extremely generous, even if new requests with claims of considerably altered scope had been submitted, because such new requests are very often the last chance for the proprietor to obtain any patent for the particular subject-matter (T 840/93, OJ EPO, 1996, 335, point 3.2 of the reasons).

In particular, the boards of appeal allowed amended or auxiliary requests during the appeal procedure provided such requests were *bona fide* attempts to overcome objections raised and furthermore were clearly allowable, ie it was immediately clear that the requirements of Articles 123(2) and (3), 84 and preferably 54 EPC were met (T 840/93, point 3.2.1 of the reasons). As regards the present case, the board has no doubt that the filing of amended claims was a *bona fide* attempt to overcome the objections raised in the decision under appeal.

- 1.4 The Board cannot accept the respondent's argument that "it has been made clear in numerous decisions of the Boards of Appeal that the function of an appeal is to give a judicial decision upon the correctness of a decision taken by a first instance department, in this case the Opposition Division".

1.4.1 Firstly, this statement is not entirely supported by the decision mainly relied upon, ie G 9/91 (OJ EPO 1993, 408; paragraph 18 of the reasons), since the latter states: "The purpose of the appeal procedure inter partes is mainly to give the losing party the possibility of challenging the decision of the Opposition Division on its merits" (emphasis by the board).

Although paragraph 18 of G 9/91 refers to the purpose of the appeal procedure inter partes, it is pointed out that this general pronouncement has been given in the context of introducing a fresh ground of opposition by the opponent at the appeal stage. There is no indication that it should apply equally to the filing of new requests by the proprietor. Moreover, it is stated in the same paragraph of G 9/91 that opponents having always the possibility of initiating revocation proceedings before national courts, if they do not succeed before the EPO, are in a better position than proprietors facing the risk of the revocation of the patent, which means an irrevocable loss of rights.

In the board's view, this inequality of the positions of the proprietor (last-chance) and the opponent is the reason why the above cited general pronouncement in G 9/91 cannot apply equally to the opponent and the patent proprietor.

1.4.2 Secondly, the respondent's argument is also not supported by T 840/93 where a board of appeal did not consider a new request of the proprietor at the appeal stage which had not been before the opposition division. This board of appeal made it clear in point 3.2.2 of the reasons that it did not exercise its discretion in favour of the proprietor because the

above cited last-chance argument did not apply in that specific case. Thus, the respondent's assumption that the principle behind this decision was that the boards of appeal should in general only admit requests if they have already been in front of the opposition division or if they clearly overcame the opposition and no issues requiring detailed discussion were introduced, has no basis in the decision relied upon. Hence, the reasons for not admitting new requests in T 840/93 cannot be applied in the present case where the last-chance argument is valid.

1.5 In summary, the appeal is admissible.

2. *Admissibility of the main request*

2.1 The respondent objected to the admissibility of the main request submitted during the oral proceedings held on 5 June 2002 for being late filed and for being not clearly allowable.

2.2 As stated in several decisions (Case Law of the Boards of Appeal of the European Patent Office, fourth edition, VII.D.14.1) and in point 1.3 above, admission of new requests put forward by a proprietor is a matter of discretion of the appeal board. In principle, the boards may admit amended requests or auxiliary requests if they are serious attempts at overcoming objections, or if their late filing can be justified and the board can see *prima facie* that they are admissible. Furthermore, it was held in T 577/97 (5 April 2000; not published in OJ EPO; point 3 of the reasons) that a board "has at least the discretion to accept amended claims at any stage of the opposition proceedings, thus also during oral proceedings".

- 2.2.1 If, as in the present case, it turns out during the discussion at the oral proceedings that the claims on file do not meet the requirements of the EPC, it is justifiable to give the proprietor an opportunity to overcome the objections, eg by limiting the claims accordingly. To refuse the new main request solely on the ground that it was filed too late would be a too formalistic approach in the present case, in particular as the board has no doubt that the new main request was a serious attempt by the proprietor to overcome the objections raised at the oral proceedings against the claims on file. Thus, the board considers that the extremely late filing of the main request does not constitute a bar to the admissibility of the main request.
- 2.2.2 Being basically a combination of granted Claims 1 and 2, the claim also fulfils the criterion of being *prima facie* allowable with respect to Articles 123 and 84 EPC, although it is at least questionable whether this criterion is a valid precondition at all to allow or refuse a late filed request of a proprietor in appeal proceedings (see T 577/97, point 3 of the reasons).
- 2.2.3 Although the filing of new requests at a late stage of appeal proceedings is in any case undesirable, and in the present case even led to an adjournment of the oral proceedings, the board can nevertheless see no abuse of the procedure in the present case by the appellant (proprietor) which would justify the refusal of the request, since, in a case like this, where the patent as a whole including all granted claims was opposed, the limitation to subject-matter of one of the dependent claims could hardly take the opponent by surprise.

2.3 Therefore, the main request filed on 5 June 2002 was admitted into the proceedings.

3. *Amendments (main request)*

3.1 The claim of the main request differs from Claim 1 as granted in two aspects, namely that:

(a) the requirement for the amount of polyunsaturated compound in the ethylene copolymer has been reworded to "said ethylene copolymer comprising 0.2-3% by weight of said polyunsaturated compound", and

(b) the process step "... and cross-linking the originally unsaturated ethylene copolymer" has been added at the end of granted claim.

3.2 As regards amendment (a), which was not necessitated by any of the grounds of opposition raised by the opponent under Article 100 EPC, this amendment was apparently introduced to remove the unclarity inherent to the wording of granted Claim 1 and to remove the inconsistency with page 4, lines 7 to 8. The board did not object against this amendment, because the wording is explicitly disclosed on page 4, ie Article 123(2) EPC is met, and, furthermore, the extent of protection (Article 123(3) EPC) is not affected by this amendment.

3.3 Amendment (b) is based on Claim 2 as granted including a minor amendment of an editorial nature, ie amending the granted passive form "... wherein the originally unsaturated ethylene copolymer is cross-linked" to the

active form "... and cross-linking the originally unsaturated ethylene copolymer". Consequently, the amendment meets the requirements of Article 123(2) and (3) EPC. Nor was any objection under Article 123 EPC raised by the respondent against this amendment.

4. *Clarity (main request)*

4.1 Claim 1 as granted, ie before amendment, is directed in general terms to the use of a polyunsaturated compound as a comonomer in the production of an unsaturated ethylene copolymer. Thus, Claim 1 as granted contains two different aspects of a use claim:

- (i) On the one hand, the claim defines the use of a particular physical entity to achieve an "effect", ie the use of the polyunsaturated compound as a comonomer, whereby the terminology "as comonomer" makes it clear that the polyunsaturated compound is statistically incorporated into the polymer chain.
- (ii) On the other hand, the claim defines the use of the particular physical entity to produce a product, ie the use of the polyunsaturated compound in the production of an unsaturated ethylene copolymer.

Although a use claim normally falls either in category (i) or (ii) (see for example G 2/88, OJ EPO, 1990, 093, point 5.1 of the reasons; T 401/95, 28 January 1999, not published in OJ EPO, point 4.3.2 of the reasons), the above analysis of the claim language shows that such a clear distinction is not possible for Claim 1 as granted. Moreover, the claim contains elements of both categories.

- 4.2 Apart from the fact that the latter category (ii) always implies the presence of physical process steps for the production of the product, Claim 1 as granted contains further explicit process features, ie the reference to radical polymerisation under specified temperature and pressure conditions and the reference to a free radical initiator.
- 4.3 This leads the board to observe that Claim 1 as granted already contained a mixture of application and process features. The incorporation of a further process feature into Claim 1 as granted, ie "and cross-linking the originally unsaturated ethylene copolymer", does not make the claim objectionably unclear. Firstly, the grammatical form of the claim wording does not create unclarity so that the skilled reader can clearly understand what is meant by the claim. Secondly, the additional process step has a technical affinity to the "core" of the invention, ie the incorporation of an unsaturation into the polymer. It is indeed the incorporated unsaturation which facilitates the crosslinking of the polymer referred to in the additional process step. Due to this affinity, both the application and the process features are technical features of the invention so that their combination does not contravene Rule 29(1) EPC according to which "The claims shall define the matter for which protection is sought in terms of the technical features of the invention". This is considered to be a relevant criterion for the assessment of the extent to which the combination of a "use" claim and technical process features is allowable from the point of view of clarity (Article 84 EPC) (see G 2/88, point 2.5 of the reasons).

4.4 The respondent's objection against the claim of the main request was based on T 796/91 (27 January 1993, not published in the OJ EPO, point 12 of the reasons) where it was held that the heterogeneous combination of process features and application features rendered the claim fundamentally unclear. However, the facts of the present case differ significantly from those underlying T 796/91. In particular, the latter concerned the combination of a process claim and a use claim belonging to the above mentioned category (i) and containing no process features at all. In contrast to the present case, the process features apparently had no affinity to the application features which made it impossible to subsume these two different types of technical features under one claim.

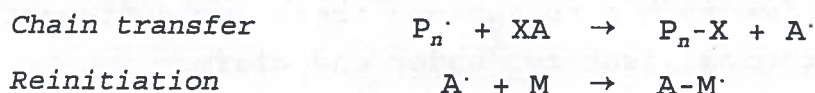
4.5 In summary, the claim of the main request meets the requirements of clarity (Article 84 EPC).

5. *Novelty (main request)*

5.1 According to D1, there is disclosed a polymerization process for ethylene, or a mixture of ethylene and at least one ester of (meth)acrylic acid, in the presence of at least one free radical initiator, under a pressure ranging from about 800 to 2500 bar and at a temperature ranging from about 140 to 280°C, and in the presence of an effective amount of at least one chain-transfer agent which is a non-conjugated diene (page 2, lines 8 to 27). Among the non-conjugated dienes mentioned as suitable for use, preferred are those having a long chain backbone, ie comprising at least six carbon atoms, such as 1,5-hexadiene, 1,9-decadiene and 2-methyl-1,7-octadiene (page 3, lines 5 to 9). Thus, the process features mentioned in D1 overlap with those referred to in the claim of the main request, and one of the explicitly mentioned non-conjugated dienes, ie 1,9-decadiene, meets the

requirements for the polyunsaturated compound in the claim. However, the dienes are used as chain-transfer agents.

5.1.2 Chain transfer refers to the termination of a growing polymer chain and the start of a new one. The process is mediated by a chain transfer agent, which may be the monomer, initiator, solvent, polymer, or some species that has been added deliberately to effect chain transfer, In the following, $P_n\cdot$ is the growing polymer radical, M the monomer and XA, the chain transfer agent:



In a case where the chain-transfer agent is also a monomer of the polymerization system, the same compound has a dual function: if functioning as a chain transfer agent, it causes the interruption of the growth of a polymer chain and the simultaneous formation of a new polymer chain; if, on the other hand, functioning as a monomer, it is incorporated into the growing polymer chain without stopping the growth of that polymer chain.

5.1.3 According to the decision under appeal a skilled person knew that the dienes of D1 had such a dual function. On the one hand, they acted as chain-transfer agent, as explicitly stated in D1, on the other hand, they could act as comonomers in the radical polymerization due to the two double bonds in the molecule. Therefore, the terminology "as a comonomer" in the patent in suit was not considered to be a novelty distinguishing feature.

5.1.3.1 Although the appellant did not criticize this reasoning, the two functions of the non-conjugated dienes are normally not equivalent. Therefore, the terminology "as chain-transfer agent" or "as comonomer", respectively, must be interpreted in the sense of indicating the preference of the one or the other function.

5.1.3.2 As regards D1, this document does not attribute the non-conjugated dienes to the monomer system which builds the constitutional units of the ethylene (co)polymer but lists them separately **as chain-transfer agents** (emphasis added).

5.1.3.3 Whilst a specific reaction in which a non-conjugated diene is used is described in the sole worked example of D1 (pages 9 and 10), this is 1,5-hexadiene which falls outside the scope of Claim 1 of the patent in suit. There is no corresponding detailed disclosure giving relevant technical details for any of the other non-conjugated dienes mentioned in D1, let alone for the relevant species 1,9-decadiene. The latter species is merely listed as an alternative in the context of the more general disclosure of D1. This general disclosure is not adequately detailed, in the board's view, however, to make available (in contrast to a worked example) a tangible product susceptible of analysis as to its structure. Hence, the disclosure of D1 does not make available to the skilled reader the structure of a polymer product in which 1,9-decadiene has been used. A person skilled in the art would therefore assume that the primary, ie predominant, function of the dienes in D1 is the

interruption of the growth of a polymer chain and the simultaneous formation of a new polymer chain resulting in a polymer structure where at most one diene molecule is incorporated at the initial end of each new polymer chain.

5.1.3.4 This interpretation is supported by the experiments in the patent in suit employing 1,5-hexadiene, the only non-conjugated diene exemplified in D1. As can be seen from Comparative Examples 2 to 4 in Table 1 of the patent in suit, the yield of double bonds per 1000 carbon atoms in the polymer is very low for 1,5-hexadiene, whereas 1,9-decadiene (Examples 6 and 7) gives a substantial contribution thereof. Indirectly, this comparison shows that 1,5-hexadiene acts predominantly as a chain-transfer agent, while 1,9-hexadiene instead acts as a comonomer and thus gives a substantial contribution of double bonds to the polymer formed.

5.1.3.5 Thus, the present case differs from T 210/93 and T 279/93, relied upon by the opposition division, because the teaching that a certain diene, ie 1,9-hexadiene, can act predominantly as a comonomer remained hidden in the disclosure of D1 and has not been made available to the public. This new use of the known compound must therefore be considered as a functional technical feature as set out in G 2/88 (point 10.3 of the reasons), which distinguishes the claimed subject-matter from the teaching of D1.

5.1.4 Furthermore, D1 is completely silent as regards the crosslinking of the formed polymer which is required in the claim of the main request. Although the respondent admitted that D1 does not contain an explicit reference to the crosslinking of the polymers, it argued that crosslinking inherently occurred when the polymers of D1 were used for the

coating of metal substrates as stated on page 1, lines 4 to 8 and on page 8, lines 22 to 28 of D1. Coating a polymer film onto a metal substrate at a temperature ranging from about 140 to 330°C (page 8, line 26) would cause inevitably at least some crosslinking in the polymer. However, crosslinking is not only influenced by the temperature but by a number of other factors such as the presence or absence of air, and is normally even suppressed by the addition of antioxidants or stabilizers. No details relating to these factors are given in D1 or have been provided by the respondent, so that on the balance of probabilities it has not been shown that crosslinking inevitably occurs with the polymers of D1.

- 5.1.5 In summary, the subject-matter of the main request is novel over D1.
- 5.2 D10 discloses in the claim a copolymer composition produced by copolymerizing ethylene and from 0.1 mol percent to 10 mol percent based on the ethylene feed of a methyl substituted α,ω -diolefin selected from the group consisting of 3,3-dimethylpentadiene-1,4, 3,3,4,4-tetramethylhexadiene-1,5, 3,3,5,5-tetramethylheptadiene-1,6, and 3,3,6,6-tetramethyloctadiene-1,7.
- 5.2.1 According to the respondent, 3,3,6,6-tetramethyloctadiene-1,7 met the requirements of the claim of the main request, because the language of the claim covered substituted straight-chain compounds.
- 5.2.2 The board cannot accept this argument because the claim clearly requires that the polyunsaturated compound has a **straight carbon chain**. In chemistry, there is a generally accepted distinction between a straight carbon chain and a branched carbon chain. A straight chain of carbon atoms refers to a sequence of

carbon atoms extending in a direct line without any subordinate carbon chains whereas a branched chain refers to a series of carbon atoms having subordinate chains of one or more carbon atoms. Following this generally accepted definition, 3,3,6,6-tetramethyloctadiene-1,7 contains a chain of eight carbon atoms including 4 subordinate methyl chains. In other words, it contains a branched carbon chain and not a straight carbon chain.

5.2.3 Hence, and for this reason alone, the subject-matter of the main request differs from the disclosure of D10, and there is no need to decide whether or not there exists a further distinction over D10, in particular whether or not D10 discloses a distinct crosslinking step.

5.3 In summary, the subject-matter of the claim of the main request is novel over D1 and D10.

6. *Remittal to the first instance for further prosecution*

6.1 The appellant submitted that the issue of inventive step was a fresh ground of opposition and objected against its introduction at the appeal stage. In this respect, it relied on G 10/91 (OJ EPO 1993, 420) where the Enlarged Board of Appeal held that "in principle, the opposition division shall examine only such grounds for opposition, which have been properly submitted and substantiated in accordance with Article 99(1) in conjunction with Rule 55(c) EPC" (Headnote II, first sentence). In the present case, however, inventive step was merely mentioned in the Notice of Opposition but not properly substantiated. Consequently, this ground for opposition was not in the opposition appeal proceedings and could not be examined.

6.2 In the present case, EPO Form 2300.2-04.93 of the Notice of Opposition, filed on 4 September 1997, indicates under VI that the subject-matter of the European patent opposed is not patentable (Article 100(a)EPC) because it is not new (Article 52(1); 54 EPC) and it does not involve an inventive step (Article 52(1); 56 EPC), ie both relevant boxes have been marked with a cross. As is apparent from point 4.11 of the Notice of Opposition, the use of polyunsaturated compounds other than 1,9-decadiene was considered to be obvious (emphasis added by the board). Thus, the board cannot accept the appellant's allegation that the present case lacks complete substantiation with regard to inventive step.

6.3 Furthermore, it has to be taken into account that the patent in suit has been opposed mainly on the ground of lack of novelty which has been substantiated in great detail. It has already been held in T 131/01 (18 July 2002, to be published in the OJ EPO; point 3.1 of the reasons) that in a case where the patent has been opposed on the ground of lack of novelty and inventive step, and the ground of lack of novelty has been properly substantiated, "a specific substantiation of the ground of lack of inventive step is neither necessary - given that novelty is a prerequisite for determining whether an invention involves an inventive step and such prerequisite is allegedly not satisfied - nor generally possible without contradicting the reasoning presented in support of lack of novelty", and that "in such a case, the objection of lack of inventive step is not a fresh ground for opposition and can consequently be examined in the appeal proceedings without the agreement of the patentee".

Therefore, inventive step is not a new ground of opposition in the present case and its examination in the opposition appeal proceedings does not amount to a procedural violation as alleged by the appellant.

- 6.4 Inventive step was not, however, considered in the decision under appeal, let alone inventive step of the subject-matter of the present main request. Consequently, a decision on inventive step by the board would deprive the losing party of a level of jurisdiction in his matter. Furthermore, document D10, which was only introduced at the appeal stage, appears relevant for the assessment of inventive step. The introduction of this document during the appeal stage has changed the factual framework to an extent that the case is no longer comparable with the one decided by the opposition division. Hence, the board has decided to make use of its powers under Article 111(1) EPC to refer the case back to the first instance for further prosecution.

7. *Question to the Enlarged Board of Appeal*

As the board decided that the combination of application and process features is allowable in the specific circumstances of the main request, there is no basis for the board to refer the question concerning the combination of use claims to the Enlarged Board of Appeal.

8. *Auxiliary requests I to III*

Because the appellant succeeded on the main request, there was no need to consider the introduction of auxiliary requests I to III into the proceedings.

9. *Apportionment of costs*

9.1 The respondent requested that the board order a different apportionment of the costs associated with the appeal, because the appellant had provided an entirely different situation for consideration than was the situation in front of the opposition division.

9.2 As already indicated above (see points 1.2 to 1.4), the filing of a new request put forward by the proprietor on appeal being not identical to the ones already before the opposition division is in line with established case law, and does not amount to an abuse of the procedure which would justify a different apportionment of costs.

9.3 Admittedly, the second oral proceedings were at least partially caused by the appellant's late filing of a new main request during the first oral proceedings on 5 June 2002. However, it was the respondent which indicated a wish to continue in writing in view of the alteration of the scope of the new main request. Furthermore, due to the relatively complex situation of the present case, the board itself considered it necessary to have a further oral discussion with the parties. Thus, it cannot be stated that the costs incurred in view of the second oral proceedings were caused solely by the behaviour of the appellant.

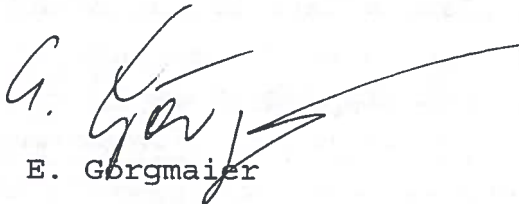
9.4 In summary, in the present case, the board sees no reason for departing from the principle that each party to the proceedings shall meet the costs it has incurred. Therefore, the respondent's request for apportionment of costs according to Article 104(1) EPC is rejected.

Order

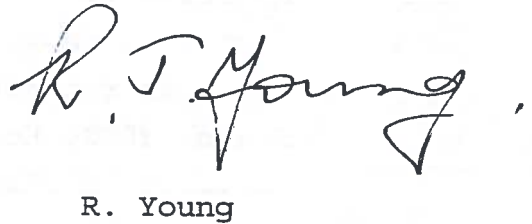
For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division for further prosecution on the basis of the main request, ie the claim submitted as "main request" at the oral proceedings held on 5 June 2002.
3. The request for apportionment of costs is rejected.

The Registrar:


E. Gorgmaier

The Chairman:


R. Young