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Datasheet for the decision of 19 May 2009

Case Number: T 0217/07 - 3.3.03

Application Number: 97109563.3

Publication Number: 0884353

IPC: C08L 23/00

Language of the proceedings: EN

Title of invention:
Impact modifier for thermoplastic polyolefins

Patentee:
Advanced Elastomer Systems, L.P., et al

Opponent:
Basell Polyolefine GmbH
Wenben Inc.

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 104(1), 111(1), 114(2)

Relevant legal provisions (EPC 1973):
EPC Art. 104(1)

Keyword:
"Late-filed documents admitted into the proceedings request for remittal refused"
"Novelty (yes)"
"Inventive step (no) - all requests"
"Costs - apportionment (no)"

Decisions cited:
T 0246/91, T 0495/91

Catchword:
Reasons 7.2

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0217/07 **-** 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 19 May 2009

Appellant: (Opponent 02)
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-

Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office dated 26 October 2006 and posted 29 November 2006 concerning maintenance of European patent No. 0884353 in amended form.

Composition of the Board:

Chairman: R. Young
Members: W. Sieber
C. Vallet

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 884 353, in respect of European patent application No. 97109563.3, in the name of Advanced Elastomer Systems, L.P. and ExxonMobil Chemical Patents Inc., filed on 12 June 1997, was published on 30 October 2002 (Bulletin 2002/44). The granted patent contained 18 claims, whereby Claim 1 read as follows:

"An impact modifier composition comprising in a blend

(a) 5 to 95% by weight of at least one random copolymer consisting of ethylene, propylene and, optionally, a non-conjugated diene comonomer containing 5 to 20 carbon atoms; and
(b) 95 to 5% by weight of at least one low to very low density random copolymer consisting of ethylene/C_4 to C_{20}-alpha-olefin comonomers, said copolymer having a density of 0.860 to 0.925 g/cm^3 and being obtained by metallocene catalysis; based on the total amount of (a) and (b)."

II. Notices of opposition were filed on 30 July 2003 by Basell Polyolefine GmbH (opponent 01) and by DuPont Dow Elastomers LLC (opponent 02), subsequently transferred to Wenben Inc. The opponents have requested revocation of the patent in its entirety on the ground that the claimed subject-matter lacked novelty and did not involve an inventive step (Article 100(a) EPC). Opponent 02 further invoked the grounds pursuant to Article 100(b) EPC. The oppositions were supported by the following documents:

D1: EP 0 730 003 A;

D2: WO 96/06132 A;

D3: US 4 087 485 A;

D4: US 4 822 855 A;

D5: US 5 576 374;

D6: US 4 588 775;

During the opposition procedure, opponent 02 filed the following further documents:

D7: Product information pamphlet on ENGAGE™ polymers; and

D8: Declaration by Morgan M. Hughes of The Dow Chemical Company.

II. By an interlocutory decision which was announced orally on 26 October 2006 and issued in writing on 29 November 2006, the opposition division found that the patent could be maintained the patent in amended form based on the proprietor's 4th auxiliary request filed during the oral proceedings on 26 October 2006.

The claim set of the 4th auxiliary request contained 9 claims whereby Claims 1 and 8 read as follows:

"1. An impact modifier composition consisting of a blend of

(a) 5 to 95% by weight of at least one random copolymer consisting of ethylene, propylene and, optionally, a non-conjugated diene comonomer containing 5 to 20 carbon atoms wherein the random copolymer contains from 40 to 80% by weight of ethylene and has a density of 0.850 to 0.900 g/cm^3; and
(b) 95 to 5% by weight of at least one low to very low density random copolymer consisting of ethylene/C_4 to C_{20}-alpha-olefin comonomers, said copolymer having a density of 0.860 to 0.925 g/cm^3 and being obtained by metallocene catalysis, based on the total amount of (a) and (b).

8. Use of the composition as defined in anyone of claims 1 to 7 as an impact modifier in compositions comprising polypropylene and, optionally, additives, wherein the impact modifier is present in the composition in an amount of 4 to 60% by weight, based on the total amount of the propylene, the impact modifier and optional additives."

The opposition division held that the amendments made to the claims of the 4th auxiliary request met the requirements of Article 123(2) and 83 EPC. The subject-matter of the 4th auxiliary request was also novel over the cited prior art.

The late filed document D7 was not admitted into the proceedings because it was post-published. D8 was admitted into the proceedings.

An inventive step over D2 was acknowledged, in particular because Examples 4-10 of the patent in suit demonstrated improved impact strength over Comparative

Examples 1-3 which were examples according to D2. This effect obtained by the claimed composition had not been suggested by D2 taken alone or in combination with any other document.

III. On 7 February 2007, the appellant (opponent 02) filed a notice of appeal against the above decision with simultaneous payment of the prescribed fee. The statement of grounds of appeal was filed on 4 April 2007 together with the following new documents:

D9: WO 98/54260 A;

D9b: USSN 08/864,954 (priority document for D9);

D9c: epoline entry for EP0986612 (derived from D9);

D10: WO 96/19533 A;

D11: declaration by Brian W. S. Kolthammer of The Dow Chemical Company dated 28 March 2007;

D12: George Odian, "Principles of Polymerisation", 2nd edn., New York/Chichester/Brisbane/Toronto/ Singapore, John Wiley & Sons, 1981, 496;

D13: "Polypropylene Handbook", edited by Edward P. Moore, Jr., Munich Vienna New York, Hanser Publishers, 1996, 149-154, 162-164, 245-249, 254;

D14: S. Di Martino et al., "Determination of the Composition of Ethylene-Propylene-Rubbers using ^{13}C-NMR Spectroscopy", Journal of Applied Polymer Science, vol. 56 (1995), 1781-1787;

D15: Product information pamphlet on EXACT™ polymers (the 119-1092-0033-A code in the bottom right corner indicating that the document is a 1992 pamphlet); and

D16: Thomas C. Yu, "Preparation of Metallocene Plastomer Modified High Flow Thermoplastic Olefins", ANTEC '96, 1995-2000.

The arguments of the appellant may be summarized as follows:

(a) With regard to the admissibility of D9-D16, the appellant submitted that these documents were ***prima facie*** highly relevant to the consideration of novelty and inventive step and were filed in response to the patentee's own actions in amending its claims at a very late stage in the opposition procedure.

(b) D9 and D10 anticipated the claimed subject-matter.

(c) The claimed subject-matter was obvious over D2, in particular Examples 12 and 14 of D2 which disclosed propylene compositions comprising an ethylene-propylene rubber (EPR) and an ethylene-co-butene or ethylene-co-octene elastomer as impact modifying additives. The objective technical problem had to be formulated as to adopt a suitable EPR and ethylene-co-butene or ethylene-co-octene elastomer for use in Examples 12 and 14. The person skilled in the art would, in taking the obvious step of seeking to follow Examples 12 and

14 of D2, have selected in an obvious manner an EPR and an ethylene-co-butene or ethylene-co-octene elastomer meeting the requirements of Claim 1 as maintained by the opposition division. D10-D16 were cited in this context to provide evidence for generally known aspects relating to EPR and metallocene catalysed elastomers.

As regards inventive step, the opposition division's conclusion that the claimed subject-matter solved the problem of providing improved impact resistance over D2 appeared erroneous since such an improvement had not been plausibly demonstrated. In this connection, attention was drawn to Comparative Examples 1-3 in the patent in suit and the experimental data provided by the patentee with its submissions dated 24 August 2006 (Tables 1 and 2).

IV. In its reply dated 26 October 2007, the respondent (proprietor) requested that the appeal be dismissed, ie that the patent be maintained on the basis of the 4th auxiliary request found allowable by the opposition division in its decision issued 29 November 2006 and refiled as main request together with its reply.

The appellant also requested not to allow D9-D16 into the proceedings as they were late filed and irrelevant.

Further, the respondent requested to remit the case back to the first instance for further prosecution and to apportion 100% of the costs incurred by the respondent and its representative in conjunction with the submission of the late filed references (including

future costs arising from a possible remittal), should the board come to the conclusion that the approach taken by the appellant on the basis of the newly cited prior art references D9-D16 was more relevant than the approach taken by the opposition division based on D1-D6 and D8.

Alternatively, the respondent requested to maintain the patent on the basis of the auxiliary request (Claims 1 to 8) filed with the reply dated 26 October 2007 and corresponding to the 5th auxiliary request filed during the oral proceedings before the opposition division. Claim 1 of the auxiliary request read as follows:

"Use of a composition consisting of a blend of

(a) 5 to 95% by weight of at least one random copolymer consisting of ethylene, propylene and, optionally, a non-conjugated diene comonomer containing 5 to 20 carbon atoms wherein the random copolymer contains from 40 to 80% by weight of ethylene and has a density of 0.850 to 0.900 g/cm^3; and
(b) 95 to 5% by weight of at least one low to very low density random copolymer consisting of ethylene/C_4 to C_{20}-alpha-olefin comonomers, said copolymer having a density of 0.860 to 0.925 g/cm^3 and being obtained by metallocene catalysis, based on the total amount of (a) and (b),

as an impact modifier in compositions comprising polypropylene and, optionally, additives, wherein the impact modifier is present in the composition in an amount of 4 to 60% by weight, based on the total amount

of the propylene, the impact modifier and optional additives."

V. The arguments of the respondent may be summarized as follows:

(a) D9 and D10 did not contain any direct and unambiguous disclosure concerning a pre-blend that would be equivalent to the composition claimed in Claim 1 of the main request.

(b) The appellant's definition of the objective technical problem was based on hindsight. There was no evident reason to depart from the problem definition set forth in paragraph [0017] in the patent in suit. Generally, the objective definition of the problem to be solved by the invention should start from the problem described in the opposed patent. The problem should not be tendentiously formulated in a way directed towards the claimed solution. Generally, a reformulation of the problem should only be made if the problem posted in the opposed patent has not been credibly solved. Attention was drawn in this context, in general terms, to the jurisprudence of the boards of appeal.

The disclosure of D2, in particular Examples 12 and 14 distinguished from the subject-matter of Claim 1 of the main request by the density of the EP copolymer and by the density of the poly(ethylene-co-butene)/poly(ethylene-co-octene). Moreover, there was nothing in D2 which could be regarded by a skilled person as an incentive to

use a blend consisting of an ethylene/propylene copolymer and a metallocene catalyzed ethylene/α-olefin copolymer as an impact modifier.

The object was to provide an impact modifier which was most suitable for imparting/improving impact resistance to polyolefin compositions, in particular to polypropylene compositions. Excellent impact strength should be achieved, while maintaining a superior balance of the overall properties such as melt flow capability, toughness, rigidity and excellent surface aspect. The object was achieved by the impact modifier composition claimed in Claim 1.

The findings would have been unobvious for the skilled person on basis of the teaching of D2. Furthermore, Examples 12 and 14 of D2 were not at all related to impact property improvement (cf. Table 3) and there was no indication on the type of EPR and plastomer in terms of product composition. Moreover, as shown in Examples 4 to 10 of the opposed patent, compositions containing the ethylene/propylene copolymer (a) and the ethylene/α-olefin copolymer (b) provided better impact strength to polyolefins than compositions according to Comparative Examples 1 to 3, which were examples according to D2. This effect obtained by the particular composition of the claimed invention had been suggested neither in D2 taken alone nor in combination with any other document. In this connection attention was drawn to the letter dated 24 August 2006.

VI. The party as of right (opponent 01) did not file any observations or requests.

With a letter dated 12 February 2009, it informed the board that it would not attend the oral proceedings scheduled to take place on 19 May 2009.

VII. With a letter dated 17 April 2009, the appellant notified that it would not attend the scheduled oral proceedings. The appellant withdrew its previously entered request for oral proceedings, but otherwise maintained its request that the interlocutory decision of the opposition division be set aside and the patent be revoked, for the reasons previously put forward in writing.

VIII. With a letter dated 13 May 2009, the respondent withdrew its previous request for oral proceedings and requested a decision on the basis of the requests on file.

IX. On 19 May 2009 oral proceedings were held before the board where the parties, as announced, were not represented. Since they had been duly summoned, however, the oral proceedings were continued in their absence in accordance with Rule 115(2) EPC and Article 15(3) RPBA (OJ EPO 2007, 536).

Reasons for the Decision

1. The appeal is admissible.

2. *Late filed documents*

2.1 Facts and evidence in support of an opposition which are presented after the nine-month period from grant of a European patent has expired are out of time and late, and may be admitted into the proceedings as a matter of discretion under Article 114(2) EPC. Generally, the relevance of the late-filed documents is for the boards of appeal one of the decisive criteria for admitting them into the proceedings (cf Case Law of the Boards of Appeal of the European Patent Office, 5th edition 2006, VI.F.2 and VI.F.3).

In the present case the appellant filed with the statement of grounds of appeal new documents, namely D9-D16, and justified the late filing of these documents on the basis of both their ***prima facie*** relevance and the fact that the documents were being submitted in response to late filed amendments introduced by the patentee shortly before the oral proceedings in the opposition procedure.

2.2 The board agrees with the appellant that D9 to D16 are ***prima facie*** highly relevant with respect to novelty and inventive step of the claimed subject-matter. Further, the documents have been filed together with the statement of grounds of appeal, ie at the earliest possible stage in the appeal procedure, so that also the requirements of Article 12(2) RPBA (OJ EPO 2007, 536) are met.

In view of the above, the board has admitted D9-D16 into the proceedings.

3. *Remittal*

3.1 The respondent requested that the case be remitted to the first instance for further prosecution should the board come to the conclusion that the approach taken by the appellant on the basis of newly filed documents D9-D16 is more relevant than the approach taken by the opposition division based on D1-D6 and D8.

3.2 As pointed out above, D9-D16 have been filed together with the statement of grounds of appeal, ie at the earliest possible stage in the appeal procedure, so that the respondent had ample time to analyse the documents and to take the steps deemed necessary, eg by filing counterarguments and/or auxiliary requests. And this is exactly how the respondent reacted. It filed a detailed answer to the statement of grounds of appeal indicating why, according to its opinion, the claimed subject-matter was both novel and inventive over the newly cited prior art. The respondent even filed an auxiliary request. Thus, both parties have expounded their arguments on all the relevant documents and the board is in position to decide on the issue of novelty and inventive step. Furthermore, the filing of the new documents did not amount to a fresh case with respect to inventive step which was the decisive reason in the present case that eventually led to the revocation of the patent in suit. The appellant's attack on inventive step was still based on D2, ie a document which was ***ab initio*** in the opposition procedure. Under these circumstances, a remittal of the case appears to be an unnecessary delay of the procedure.

Consequently, the board has refused the respondent's request for remittal of the case to the first instance for further prosecution exercising its power under Article 111(1) EPC.

Main request

4. *Novelty (main request)*

A novelty objection has been raised only in view of the newly cited documents D9 and D10.

4.1 D9 was published on the 3 December 1998, claiming priority from an earlier US application dated 29 May 1997 (US 08/864,954), the relevant content of which is identical to D9. D9 entered the European regional phase. Accordingly, D9 constitutes prior art under Article 54(3) EPC.

D9 relates to a composition comprising a melt blend of (A) an impact modified polypropylene composed on a thermoplastic propylene polymer and an impact modifying olefin copolymer elastomer (OCE) and (B) a plastomer comprising ethylene copolymerized with an α-olefin comonomer. The manner in which the plastomer is incorporated into the impact modified polypropylene is not critical (page 14, lines 2-3). One option constitutes - *inter alia* - pre-blending the plastomer with the impact modifying OCE to form a rubber-plastomer pre-blend which can later be compounded with the propylene polymer to produce the claimed composition (page 14, lines 13-15).

Although the impact-modifying OCE and the plastomer of D9 could correspond to components (a) and (b) of Claim 1 of the main request, it is conspicuous to the board that several selections from the general disclosure of D9 would have to be made in order to arrive at a composition meeting the requirements of Claim 1 of the main request. In particular, one would have to select the option of using a pre-blend, the amount of ethylene for the impact modifying OCE would have to be within the range of 40-80% by weight (D9 discloses 30-70% by weight) and the amount of impact modifying OCE and plastomer would have to be within the ranges of 5-95% by weight and 95-5% by weight, respectively (according to the calculations of the appellant the amount of impact modifying OCE and plastomer in D9 is 3-23 wt% and 67-97 wt%, respectively).

Since, however, D9 does not contain any direct and unambiguous disclosure directed to the combination of all the features of Claim 1 of the main request, the subject-matter claimed in the main request is novel over D9.

4.2 D10, which represents prior art under Article 54(2) EPC, discloses compositions obtained by incorporating a plastomer into a thermoplastic olefin elastomer (TPO). The TPO is a blend of polypropylene and rubber whereby most typically, TPOs have a propylene content of 50-80 wt% and a rubber content of 15-50 wt% (page 5, lines 5-7). Most commonly, the rubber will be an ethylene-propylene rubber or an ethylene-propylene terpolymer rubber (page 5, lines 13-14). The plastomer is preferably incorporated in an amount of 2-40 wt%

into the TPO (page 6, lines 21-22), whereby the manner in which the plastomer is incorporated into the TPO is not critical (page 8, lines 5-6). One option constitutes pre-blending the plastomer and the rubber component, with the rubber-plastomer blend later being compounded with the polypropylene in producing compounded TPOs (page 8, lines 12-14).

Although the rubber and the plastomer of D10 could correspond to components (a) and (b) of Claim 1 of the main request, it again requires at least two selections from the general disclosure of D10 in order to arrive at a composition meeting the requirements of Claim 1 of the main request. In particular, one would have to select (i) the option of using a pre-blend and (ii) to select proper amounts of rubber and plastomer in order to be within the ranges required in Claim 1 of the main request, ie 5-95% by weight and 95-5% by weight, respectively (according to the calculations of the appellant the amount rubber and plastomer in D10 is 18-96 wt% and 4-82 wt%, respectively). Further, although the rubber is preferably an ethylene-propylene elastomer, D10 is not very clear on the ethylene content of the rubber. Although the passage bridging pages 5 and 6 of D10 mentions the production of a reactor blend "in which a 60 wt.% EP ethylene elastomer is produced", it is not clear whether the 60 wt% refers to the ethylene content of the rubber component as assumed by the appellant. Finally, also the density of the rubber is not mentioned.

Thus, D10 does not contain a direct and unambiguous disclosure concerning the combination of all the features of Claim 1 of the main request.

4.3 In summary, although D9 and D10 appear ***prima facie*** relevant to the novelty of the subject-matter of the main request, the above detailed analysis of these documents shows that they do not contain a direct and unambiguous disclosure directed to the combination of the features of Claim 1 of the main request. Consequently, the claimed subject-matter of the main request is novel over D9 and D10.

5. *Inventive step (main request)*

5.1 The claimed subject-matter relates to an impact modifier composition which is most suitable for imparting impact resistance to polyolefin compositions, in particular polypropylene compositions (paragraph [0014] of the patent in suit). Further, it is stated in paragraph [0017] of the patent in suit that "An excellent impact strength should be achieved, while maintaining a superior balance of the overall properties such as melt flow capability, toughness, rigidity and excellent surface aspect".

5.2 The appellant as well as the opposition division considered D2 to represent the closest prior art.

D2 is concerned with the provision of thermoplastic blends which can be processed to provide products having combined properties of superior surface hardness, impact resistance, processability, flexural modulus, adhesion of coating, and which can be painted using conventional techniques (page 2, line 35 to page 3, line 3). The thermoplastic compositions are olefinic polymer blends, and are formed from various

combinations of thermoplastic and elastomeric components (page 3, lines 6-10), whereby the thermoplastic component comprises a polypropylene polymer and the elastomeric component is a copolymer of ethylene and a C_3-C_8 olefin (preferably butene and octene) produced with a metallocene or Kaminsky catalyst. Table 3 describes a number of exemplary thermoplastic polyolefin compositions according to the invention described in D2. In particular, in Examples 12 and 14 a polypropylene homopolymer/random ethylene-propylene copolymer is disclosed comprising a Ziegler-Natta catalysed $EPR1^{ZN}$ and either the elastomeric components poly(ethylene-co-butene)^{met} or poly(ethylene-co-octene)^{met}. It is self-evident to a person skilled in the art that the abbreviation "EPR" in $EPR1^{ZN}$ stands for ethylene-propylene rubber. "ZN" means that the EPR is Ziegler-Natta catalysed, and "met" signifies that the copolymers are metallocene catalysed (see footnotes of Table 3). Basically, $EPR1^{ZN}$ corresponds to component (a) of Claim 1 of the main request and the (poly(ethylene-co-butene)^{met} and the poly(ethylene-co-octene)^{met} correspond to component (b) of Claim 1 of the main request.

Thus, D2 discloses technical features and effects (combination of properties including impact resistance) most similar to the claimed subject-matter. Therefore, the board agrees with the appellant that D2, and in particular Examples 12 and 14 of D2, represents the closest prior art.

5.3 Turning again to Examples 12 and 14 of D2, it is apparent to the skilled reader that the components listed in Table 3 fall into groups, namely the

polypropylene matrix components, Ziegler-Natta catalysed EPR additives, metallocene catalysed elastomer additives and further additives. The latter additives are polyethylene and talc, which have no impact improving properties. Thus, it is evident to the person skilled in the art that the impact modification is provided by the two rubbery additives of the composition, namely the EPR (a component which is often used in polypropylene impact modification, eg D13, page 149, last paragraph) and the metallocene catalysed elastomer. Therefore the board agrees with the appellant that Examples 12 and 14 of D2 clearly and unambiguously disclose the impact modification of polypropylene with an ethylene-propylene rubber and a metallocene catalysed ethylene-butene/octane copolymer.

5.4 D2 does not disclose (i) that the ethylene-propylene rubber and the metallocene catalysed ethylene-butene/octane copolymer are used in the form of a composition consisting of these two components in order to impact modify the polypropylene or (ii) the ethylene content and the density of the ethylene-propylene rubber and the metallocene catalysed ethylene-butene/octane copolymers.

5.4.1 There is no evidence on file which would show that these differences provide any advantage over the closest prior art. In this connection, the respondent relied on Comparative Examples 1-3 in the patent in suit and on the experimental data provided with its submissions dated 24 August 2006 in the opposition proceedings. However, neither Comparative Examples 1-3 in the patent in suit nor the additional experiments are suitable to demonstrate an effect over the closest

prior art, ie Examples 12 and 14 of D2, for the following reasons.

5.4.2 As regards Comparative Examples 1-3 in the patent in suit, these examples are not, as alleged by the respondent, according to D2. Comparative Examples 1 and 2 of the patent in suit contain no metallocene catalysed elastomer, which is an essential feature of the teaching of D2, and Comparative Example 3 contains only a metallocene catalysed elastomer but no ethylene-propylene rubber, which is present in Examples 12 and 14 of D2.

5.4.3 The same applies to the experimental data provided with the submissions dated 24 August 2006. According to the respondent, these experimental data contain a comparison of Examples 9 and 12 of D2 against equivalent compositions according to the claimed invention. However, also these experimental data do not provide a convincing comparison of the claimed subject-matter with the closest prior art for the following reasons. Firstly, the composition used in repeating Example 9 of D2 contains only two Ziegler-Natta catalysed copolymers but no metallocene catalysed copolymer (see footnotes to Table 1 of the experimental data). Since the presence of the latter is an essential feature of the teaching of D2, it is not clear what conclusion could be drawn from an example which does not represent the invention of D2. Secondly, in the comparison with Example 12 of D2 the respondent has substituted some of the polypropylene component used in Example 12 (ie PPR 3021 SM3 reactor copolymer) with an **additional** EPR component (Vistalon® 785). Hence, the example prepared according to the requirements of

Claim 1 of the main request contains **more** impact modifier than the repetition of Example 12 of D2. Unsurprisingly, this substitution of some of the brittle polypropylene component with some additional EPR rubber provided some additional impact strength. As pointed out by the appellant, this is in no way attributable to any difference between the requirements of Claim 1 of the main request and the teaching of Example 12 of D2. Consequently, the experimental data relating to Example 12 of D2 are not a fair comparison with the prior art and can therefore not be taken into account when assessing the advantages provided by the claimed subject-matter over the closest prior art.

5.4.4 Summing up, it has not been demonstrated that the claimed compositions provide any improvement in impact resistance over the closest prior art. Consequently, the objective technical problem can only be seen in putting the teaching of D2, and in particular the teaching of Examples 12 and 14 of D2 into practice.

The main request suggests, as the solution of this problem, an impact modifier composition as defined in Claim 1. The examples in the patent in suit demonstrate that this problem is in fact solved by the compositions of Claim 1 of the main request.

5.5 In connection of the definition of the technical problem, the respondent argued that there were no evident reasons to depart from the problem definition set forth in paragraph [0017] of the patent in suit (see point 5.1, above) and drew attention to the jurisprudence of the boards of appeal without actually referring to a specific decision. It is true that, for

example, T 246/91 of 14 September 1993 (point 4.4 of the reasons of the decision; not published in the OJ EPO) states that "an objective definition of the technical problem to be solved should normally start from the technical problem that is described in the patent in suit". The immediately following sentence further qualifies this statement: "Only if it turns out that an incorrect state of the art was used to define the technical problem or that the technical problem disclosed has in fact not been solved, can an inquiry be made as to which other technical problem objectively existed" (see also T 495/91 of 20 July 1993, point 4.2 of the reasons of the Decision, not published in the OJ EPO).

In the present case, D2 lies much closer to the claimed subject-matter than any document cited in the introductory part of the patent in suit. Thus, an inquiry as to what technical effect is actually achieved over the "objective" closest prior art is not only legitimate but also imperative in order to define the "objective" technical problem. Consequently, the appellant's line of argumentation in this connection must fail.

5.6 It remains to be decided, if the suggested solution is inventive.

5.6.1 In order to prepare compositions according to Examples 12 or 14 of D2, the person skilled in the art is presented with only a very limited number of orders in which the polypropylene, EPR and metallocene catalysed ethylene/α-olefin elastomer can be combined, D2 indicating no preference as to how this should be

done. Adding the EPR and metallocene catalysed ethylene/α-olefin elastomer as a blend (as opposed to adding them separately) is a simple and straightforward option, and one that the person skilled in the art would have seriously contemplated and adopted without any difficulty. In the absence of any effect, the board sees no inventive step in such an assembly which is one of the limited options open to a person skilled in the art putting the teaching of D2 into practice.

5.6.2 The weight percent of ethylene in the EPR and the density of the EPR employed in Examples 12 and 14 of D2 is not disclosed. In choosing an EPR, it would have been obvious to refer to the other teaching in D2. In doing so it would, for example, have been obvious to use an EPR as used in the other examples of D2 (Tables 1 and 2) which comprises 50 wt% ethylene. Alternatively, even if the person skilled in the art were not to refer to the aforementioned other part of D2, in order to perform as a rubber an ethylene-propylene copolymer has to have certain minimum ethylene and propylene contents (too high a content of either the ethylene or the propylene resulting in a polymer with too great a crystallinity). The range of wt% of ethylene required in Claim 1 of the main request is so broad that it essentially encompasses all conventional ethylene to propylene ratios in EPR rubbers, as for example evidenced by:

- D12, page 496 ("Ethylene-propylene copolymers containing about 30% propylene find use as elastomers (EPR or EPM rubber)");

- D13, page 149 ("In PP impact modification, ethylene-propylene rubber (EPR) with 30% to 60% C_2 is often used"); and
- D14 (in which the ethylene content of all the tested EPR standards (used for worldwide infrared calibration purposes; ASTM D-3900) fell within 40 and 80 wt%).

Thus the person skilled in the art would have seriously contemplated employing an EPR having an ethylene content within the range claimed in claim 1 of the opposed patent, and would have found it obvious to do so.

Equally, the density of an ethylene propylene rubber (EPR) is determined primarily by its ethylene/propylene ratio, with the result that an EPR comprising between 40 and 80 wt% ethylene can be expected to have a density between 0.850 and 0.900 g/cm^3 (D8 and D11). In selecting, in an obvious manner, an EPR having the ethylene content required in Claim 1 of the main request, the skilled person would, in all probability, have also selected an EPR having a density within the range indicated in Claim 1 of the main request, such that this would also have been an obvious step to take.

5.6.3 In choosing an ethylene-co-butene or ethylene-co-octene elastomer, it would likewise have been obvious to refer to the other teaching of D2, and in particular to use an EXACT® or ENGAGE® polymer (mentioned in D2, page 11, lines 4-13), preferably having an ethylene content of 80 wt% (D2, page 9, lines 6-22), such as for example EXACT® 4033 as employed in D2, Tables 1 and 2 (pages 17 and 19). EXACT® and ENGAGE® polymers, and in particular

those having an ethylene content of 80 wt%, invariably have a density between 0.860 and 0.925 g/cm^3. Evidence of this is provided by:

- D10 (page 12, Table 3, in which all the listed EXACT® (3055, 4033, 4041) and ENGAGE® (8100, 8150, 8200) grades have a density of between 0.87 and 0.9 g/cm^3);
- D15 (Table on page 1, in which all the listed EXACT® grades have a density between 0.885 and 0.910 g/cm^3);
- D16 (page 1, first paragraph, where it is noted that metallocene catalysed ethylene-alpha olefin plastomers in general have a density between 0.86 and 0.91 g/cm^3);
- the use of ENGAGE® 8150 in the opposed patent itself; and
- the admission by the patentee in its submissions dated 24 August 2006 that EXACT® 4033 has a density of 0.879-0.881 g/cm^3 (see the experimental data, Tables 1 and 2, footnote 5, filed with the submissions).

Thus the person skilled in the art would have seriously contemplated employing an ethylene-co-butene or ethylene-co-octene elastomer having an ethylene content and a density within the ranges required in Claim 1 of the main request, and would have found it obvious to do so.

5.7 Summing up, the person skilled in the art would, in taking the obvious step of seeking to follow Examples 12 and 14 of D2, (i) have combined in a simple and straightforward manner the EPR and the metallocene

catalysed ethylene/α-olefin elastomer to form a blend, and (ii) have selected in an obvious manner an EPR and ethylene-co-butene or ethylene-co-octene elastomer meeting the requirements of components (a) and (b) of Claim 1 of the main request. Consequently the subject-matter of Claim 1 of the main request lacks an inventive step over D2.

5.8 It follows from the above that Claim 8 of the main request (point II, above), which is directed to the use of the composition of Claim 1 as an impact modifier in compositions comprising polypropylene, would also have been obvious over D2, since Examples 12 and 14 D2 self evidently disclose the use of the EPR and ethylene-co-butene/ethylene-co-octene elastomer as an impact modifier for a polypropylene matrix, the EPR and ethylene-co-butene/ethylene-co-octene elastomer being present in an amount of 30 wt% based on the total weight of the polypropylene, impact modifier and additives.

6. *Auxiliary request*

Claim 1 of the auxiliary request (point IV, above) is identical with Claim 8 of the main request which has been found to lack an inventive step. Hence, Claim 1 of the auxiliary request lacks also an inventive step and the auxiliary request has to be refused.

7. *Costs*

7.1 The respondent also requested an apportionment of costs should the board come to the conclusion that the approach taken by the appellant on the basis of newly

filed documents D9-D16 be more relevant than the approach taken by the opposition division based on D1-D6 and D8.

7.2 Article 104(1) of the revised EPC states "Each party to the opposition proceedings shall bear the costs it has incurred, unless the Opposition Division, for reasons of equity, orders, in accordance with the Implementing Regulations, a different apportionment of costs." Although Article 104(1) EPC does not refer to the boards of appeal any more (in contrast to Article 104(1) EPC 1973), the boards of appeal still have the power to apportion costs according to Article 104(1) EPC. This power stems from Article 111(1) EPC.

7.3 In the present case, there is no evidence on file that the late-filing of documents D9-D16 was done deliberately for tactical reasons. On the contrary, the filing of new documents with the statement setting out the grounds of appeal reinforcing the line of attack already made before the department of first instance has to be considered as the normal behaviour of a losing party and does not, in the absence of any evidence to the contrary, constitute an abuse of procedure. Consequently, the board sees no equitable 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 is refused.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

3. The request for an apportionment of costs is refused.

The Registrar: The Chairman:

M. Kiehl R. Young