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Datasheet for the decision of 20 October 2006

Case Number: T 0829/03 - 3.3.03

Application Number: 92923038.1

Publication Number: 0564636

IPC: C08F 10/06

Language of the proceedings: EN

Title of invention:
Polypropylene extrusion coating resins and process for the production thereof

Patentee:
Huntsman Corporation

Opponent:
Borealis Technology OY

Headword:
-

Relevant legal provisions:
EPC Art. 100(c), 123(2), 123(3)

Keyword:
"Opposition grounds - extension of subject-matter (main and auxiliary requests: yes)"
"Amendments - broadening of claim (main and auxiliary requests: yes)"
"Amendments - extension of protection (auxiliary request: yes)"

Decisions cited:
G 0010/91

Catchword:
-

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Case Number: T 0829/03 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 20 October 2006

Appellant: (Opponent)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office dated 2 April 2003 and posted 2 June 2003 concerning maintenance of European patent No. 0564636 in amended form.

Composition of the Board:

Chairman: R. Young
Members: A. Däweritz
R. Moufang

Summary of Facts and Submissions

I. The grant of European patent No. 0 564 636 in respect of European patent application No. 92 923 038.1, based on International patent application PCT/US92/09118, filed on 19 October 1992, published as WO-A-93/09150 on 13 May 1993 and claiming a priority of 29 October 1991 of an earlier application in the U.S.A. (784483), was announced on 12 January 2000 (Bulletin 2000/02). The patent was granted with 25 claims, including Claims 1, 2, 3, 9, 11, 19 and 20 as follows:

1. A process for producing a polypropylene composition suitable for extrusion coating, said process comprising reacting, under gas-phase fluidized-bed reactor conditions, at least 50 mol % propylene, another alpha-olefin at an alpha-olefin/propylene molar ratio ranging from 0 to 0.33, and hydrogen at a hydrogen/propylene molar ratio of 0.043 to 0.2 in no more than 50 mol % inert gas carrier in the presence of a magnesium halide supported titanium halogen catalyst, an organoaluminum cocatalyst, and an electron donor, wherein the aluminum/titanium molar ratio is between 30 and 150 and the cocatalyst/ electron donor molar ratio is between 3 and 6, and wherein said polypropylene composition suitable for extrusion coating has (a) a total xylene solubles content of between 4 and 35 weight percent, and (b) a melt flow rate of between 20 and 150 g/10 min at 230°C.

2. The process according to Claim 1 wherein the another alpha-olefin is a comonomer and a comonomer/propylene molar ratio and the hydrogen/propylene molar ratio during the reaction are no greater than 0.055 and between 0.02 and 0.2, respectively, when the comonomer is ethylene; no greater than 0.27, and between 0.02 and 0.14, respectively, when the comonomer is 1-butene; and no greater than 0.33 and between 0.02 and 0.14, respectively, when the comonomer is 1-hexene, or 4-methyl-1-pentene.

3. The process according to Claim 2 wherein the hydrogen/propy-lene molar ratio is between 0.02 and 0.16 when the comonomer is ethylene at an ethylene/propylene molar ratio of no greater than 0.001; or when the comonomer is 1-butene, 1-hexene or 4-methyl-1-pentene at a comonomer/propylene molar ratio of no greater than 0.005.

9. A polypropylene composition of propylene and another alpha-olefin monomer, suitable for extrusion coating, said composition comprising 99.8 to 100 mol % propylene and 0 to 0.2 mol % of the alpha-olefin wherein the polypropylene has a melt flow rate of 20 to 150 g/10 min at 230°C and a total xylene solubles content between 4 and 12 wt %.

11. A polypropylene composition of propylene and another alpha-olefin monomer, suitable for extrusion coating, said com-position comprising 92 to 99.8 mol % of the propylene and 0.2 to 8 mol % of the another alpha-olefin wherein the polypropylene has a melt flow rate of 20 to 150 g/10 min at 230°C and a total xylene solubles content between 4 and 35 wt %.

19. The process according to claim 1, wherein said total xylene solubles content is between 6 and 15 weight percent.

20. The process according to claim 1, wherein said total xylene solubles content is between 6 and 12 weight percent.

Besides the above process and product claims, the set of claims additionally comprised further independent claims, ie two claims to compositions comprising blends of the product of either Claim 9 or Claim 11 with a low density polyethylene (Claims 14 and 15), a claim to a

process for making these blends (Claim 22), a claim to an extrusion coating process making use of the above products (Claim 16) and a claim to extrusion coated articles comprising a layer made therefrom (Claim 18).

The remaining further claims were dependent claims, amongst which Claims 4 to 8 and 21 related to elaborations of the process of Claim 1, Claims 10, 12 and 13 concerned elaborations of the compositions according to the respective preceding Claims 9 and 11, Claim 17 related to an elaboration of the process of Claim 16, and Claims 23 to 25 concerned elaborations of the process of Claim 22. In each of Claims 10, 13, 17 and 21, the range of the melt flow rate (MFR) was limited to "between 40 and 80 g/10 min at 230°C".

In this decision, any references given in brackets refer to the patent in suit as granted, eg [0001] and [Claim 1], those *in italics* refer to the application as published in the above WO-A-. Any other reference printed in regular font refers to a specifically identified version of the patent in suit.

II. On 11 October 2000, a Notice of Opposition was filed on the basis of Articles 100(a) and 100(b) EPC, in which revocation of the patent in its entirety was requested for the reasons of lack of novelty (including asserted public prior uses), lack of inventive step and insufficiency of the disclosure.

(1) In the course of the further opposition proceedings, further arguments were submitted with regard to these objections by the Opponent. Moreover, in addition to nine documents and six annexes, which had initially

been cited by the Opponent to this end, three further documents and three additional annexes were also filed (annexed to additional letters of the Opponent dated 3 September 2001 and 3 February 2003).

(2) The arguments of the Opponent were disputed by the Patent Proprietor in letters of 20 March 2001, 10 January 2002 and 16 January 2003. Together with the last of these letters (received after a previous Communication of the Opposition Division dated 28 February 2002), the Patent Proprietor filed an Auxiliary Request, in which, in Claims 9 and 11, references to any of the preceding process claims, ie Claims 1 to 8 and, in Claims 16 and 18, references to any of Claims 9 to 15 had been inserted.

(3) In its letter dated 3 February 2003 mentioned in section II(1), above, the Opponent requested that an additional ground for opposition (Article 100(c) EPC) be considered in the opposition proceedings and argued to this end that, despite the fact that the process features in that claim had remained unchanged, new Claim 1 referred to product features which had not originally been disclosed in connection with the claimed process, ie the suitability of the product for extrusion coating, its total xylene solubles content of between 4 and 35 wt% and its melt flow rate of between 20 and 150 g/10 min at 230°C. Furthermore, Claim 3 would also contravene Article 123(2) due to a change of its dependency from Claim 1 as initially filed on to Claim 2 (items 1. to 1.7 of the letter).

(4) In a still further letter dated 21 March 2003, the Opponent extended its previous arguments also to the Auxiliary Request mentioned in section II(2), above.

(5) On 2 April 2003, oral proceedings were held before the Opposition Division. At the beginning, the Opposition Division allowed two persons, neither being a professional representative admitted before the EPO, who had accompanied the professional Representative of the Patent Proprietor, to make oral submissions under the supervision of the professional Representative, despite a request of the Opponent in its letter of 21 March 2003 to the contrary.

(6) In the course of the oral proceedings, the Opponent, on the one hand, submitted two method descriptions of the Opponent concerning the determinations of the melt flow rate (MFR), coded "B400", and of the xylene solubles content (XS), coded "B211", respectively, and a still further document, which was, however, considered not to be *prima facie* relevant and was not, therefore, introduced into the proceedings under Article 114(2) EPC.

(7) On the other hand, when the objection under Article 123(2) EPC (section II(3), above), ie the new ground for opposition under Article 100(c) EPC, had been admitted to the proceedings and had been found to be justified with respect to [Claim 1], the Patent Proprietor modified its Main Request by replacing [Claim 1] by a new version, but maintaining [Claims 2 to 25] unchanged. The new Claim 1 read as follows:

"1) A process for producing a polypropylene composition suitable for extrusion coating, said process comprising reacting, under gas-phase fluidized-bed reactor conditions, at least 50 mol% propylene, another alpha-olefin at an alpha-olefin/propylene molar ratio ranging from 0 to 0.33, and hydrogen at a hydrogen/propylene molar ratio of 0.043 to 0.2 in no more than 50 mol% inert gas carrier in the presence of a magnesium halide supported titanium halogen catalyst, an organoaluminum cocatalyst, and an electron donor, wherein the aluminum/titanium molar ratio is between 30 and 150 and the cocatalyst/electron donor molar ratio is between 3 and 6, and wherein said polypropylene composition suitable for extrusion coating has (a) a total xylene solubles content of between 4 and 35 weight percent when the polypropylene produced is a copolymer, and between 4 and 12 weight percent when the polypropylene produced is a homopolymer, and (b) a melt flow rate of between 20 and 150 g/10 min at 230°C." (underlining by the Patent Proprietor).

III. In the interlocutory decision announced at the end of the oral proceedings and issued in writing on 2 June 2003, it was found on the basis of the above Main Request that the patent in suit and the invention to which it related met the requirements of the EPC.

(1) In particular, it was held that Claim 1 as amended met the requirements of Article 123(2) EPC and that the objection of insufficient disclosure had not been proved by the Opponent, on whom the burden of proof had been. Moreover, the patent in suit contained, in the view of the Opposition Division, enough information enabling the skilled person to produce polymers claimed.

(2) The Opposition Division held furthermore that the annexes and documents filed to prove the asserted public prior use had not provided all the information necessary to prove up to the hilt that a public prior use had, in fact, happened.

(3) Nor had all the features of the product and process claims, respectively, been disclosed in a single one of those documents cited to this end.

(4) In particular, it was held that the melt flow rates MFR and the crystallinity had been measured in different measuring conditions, and that XS and the heptane insolubles content referred to different features. Therefore, novelty was acknowledged.

(5) Furthermore, as regards the documents cited with respect to the question of inventive step, the Opposition Division came to the conclusion that the claimed subject-matter was not made obvious by the cited prior art. Consequently, the claimed subject-matter was deemed to be based on an inventive step.

IV. On 1 August 2003, a Notice of Appeal was filed against this interlocutory decision by the Opponent/Appellant, who requested that the decision under appeal be set aside and the patent in suit be revoked. The prescribed fee was paid on the same date.

(1) The Statement of Grounds of Appeal was received on 10 October 2003, in which the Appellant objected to the admission of the oral contributions of the two persons accompanying the professional Representative of the

Patent Proprietor at the hearing before the Opposition Division (cf. section II(5), above). This objection did not, however, play any role in the further proceedings.

(2) In substance, the Appellant reiterated its previous grounds for opposition on the basis of Articles 123(2), 83, 54 and 56 EPC and cited eight further documents to further support its case concerning novelty and inventive step in addition to those documents it had already cited at the opposition stage.

(3) Further to the arguments concerning Article 123(2) EPC mentioned in section II(3), above, the Appellant argued that the specific ranges of the product features MFR and XS in the new Claim 1 had originally been disclosed only in relation to those particular polymer compositions as defined in the passage of *page 3, lines 18 to 29* and in *Claims 9 and 11*. However, these details of their composition were not included in the claim.

Likewise, the objection under Article 123(2) EPC concerning Claim 3 was also repeated (cf. section II(3), above) with a reference to the description (*page 7, line 21 to page 8, line 3*): "..., in the originally application it is made unmistakably clear that the polymer embodiments as described in claims 2 and 3 are to be understood as alternatives. This is expressed by the term 'alternatively' (page 7, line 31) with which the passage describing the polymer embodiment of claim 3 starts and which separates the description of this embodiment polymer from the description of the polymer embodiment of claim 2 (page 7, lines 21 to 30)." (item 3.6). A combination of the subject-

matter of Claims 1, 2 and 3 would not be derivable from the description as originally filed.

V. In a letter dated 23 February 2004, the Respondent disputed the arguments of the Appellant to all the different aspects addressed in the Statement of Grounds of Appeal (sections IV(1) to (3), above).

(1) In particular, the Respondent argued that none of the late-filed documents cited by the Appellant would *prima facie* be highly relevant and, therefore, the Respondent requested they be rejected under Article 114(2) EPC.

(2) As regards Article 123(2) EPC, the Respondent concurred with the finding of the Opposition Division that Claim 1 of the Main Request was based on *page 8, line 30 to page 9, line 5 and lines 17 to 18*, respectively. These passages would demonstrate that the polypropylene compositions were not restricted to the two types of polypropylene compositions of [Claim 9] and [Claim 11], respectively (cf. section I, above).

Furthermore it argued: "Finally, as the subject-matter of claim 2 is also referred back to claim 1, no new combination has been formed by back-referencing of claim 3 to claim 2. In summary, Art. 123(2) EPC is fulfilled."

(3) In addition to a retyped copy of the full set of claims according to the Main Request as maintained by the Opposition Division (section II(7), above), the Respondent filed new Auxiliary Requests I to III. The Main Request contained, however, several clerical

errors: "at" was missing in the last line of Claim 1 before "230°C" and each of Claims 16 and 18, definition (I), line 1, referred to "to 2 mol-%" instead of "to 0.2 mol-%".

Auxiliary Request I differed from this Main Request only in that Claims 9, 11, 16 and 18 had been reworded in the form of product-by-process claims reading as follows:

"9. A polypropylene composition of propylene and another alpha-olefin monomer prepared by the process according to any of the preceding claims, suitable for extrusion coating, said composition comprising 99.8 to 100 mol% propylene and 0 to 0.2 mol% of the alpha-olefin wherein the polypropylene has a melt flow rate of 20 to 150 g/l0 min at 230°C and a total xylene solubles content between 4 and 12 wt%.

11. A polypropylene composition of propylene and another alpha-olefin monomer prepared by the process according to any of the preceding claims 1 to 8, suitable for extrusion coating, said composition comprising 92 to 99.8 mol% of the propylene and 0.2 to 8 mol% of the another alpha-olefin wherein the polypropylene has a melt flow rate of 20 to 150 g/10 min at 230°C and a total xylene solubles content between 4 and 35 wt%.

16. An extrusion coating process comprising extruding at elevated temperatures onto a substrate a composition selected from compositions according to any of the claims 9 to 15.

18. An extrusion coated article of manufacture comprising a substrate and a layer coated thereon that is composed of a composition selected from compositions according to any of the claims 9 to 15.".

In Auxiliary Request II, Claim 1 was amended to replace the terms of "homopolymer" and "copolymer" as used in the second part of Claim 1 of the Main Request (section II(7), above) by the definitions given in the "Summary of the Invention" (paragraph [0010]) and Claims 9, 11, 16 and 18 had got the same wording as in Auxiliary Request I, above, whilst the remaining claims were based on unmodified [Claims 2 to 8, 10, 12 to 15, 17 and 19 to 25], ie they remained in their version as granted (cf. section I, above). Claim 1 of this request read as follows:

"1. A process for producing a polypropylene composition suitable for extrusion coating, said process comprising reacting, under gas-phase fluidized-bed reactor conditions, at least 50 mol% propylene, another alpha-olefin at an alpha-olefin/propylene molar ratio ranging from 0 to 0.33, and hydrogen at a hydrogen/propylene molar ratio of 0.043 to 0.2 in no more than 50 mol% inert gas carrier in the presence of a magnesium halide supported titanium halogen catalyst, an organoaluminum cocatalyst, and an electron donor, wherein the aluminum/titanium molar ratio is between 30 and 150 and the cocatalyst/electron donor molar ratio is between 3 and 6, and wherein said polypropylene composition suitable for

extrusion coating has (a) a total xylene solubles content of between 4 and 35 weight percent when the polypropylene composition comprises 92 to 99.8 mol-% of propylene and 0.2 to 8 mol-% of another alpha-olefin, and between 4 and 12 weight percent when the polypropylene composition comprises 99.8 to 100 mol-% propylene and 0 to 0.2 mol-% of the alpha-olefin, and (b) a melt flow rate of between 20 and 150 g/10 min 230°C." [*sic*].

Auxiliary Request III differed from Auxiliary Request I only in that the melt flow rate had been further limited at all occurrences to "between 40 and 80 g/10 min at 230°C", which rendered [Claims 10, 13, 17 and 21] redundant, so that Auxiliary Request III comprised only 21 claims.

VI. In a further letter dated 20 September 2006, nine still further documents were cited by the Appellant, who requested that these additional documents and those filed before be admitted into the proceedings. Furthermore, it reiterated its arguments concerning all its objections previously raised. In particular, it drew attention to the fact that the terms of "*the* polypropylene homopolymer" and "*the* polypropylene copolymer" (emphasis added by the Appellant) had been used in the passage on from *page 8, line 30 to page 9, line 5*, which terms "are merely abbreviated versions of and refer to the more exact definitions comprising quantitative values for the alpha-comonomer content as given e.g. on page 3, lines 18 to 21 and page 3, lines 24 to 27, or in claims 9 and 11" (of the WO-A-) (page 3, item 3.1 of the letter).

Furthermore, the Appellant argued that the original application text had not disclosed a combination simultaneously fulfilling the features of all Claims 1, 2 and 3 at the same time, *viz.* 1-butene, 1-hexene or 4-methyl-1-pentene being present as the comonomer in a comonomer/propylene molar ratio of "<0.005" (*Claim 3*; [sic]) and the specific hydrogen/propylene molar ratio of between 0.02 and 0.14 (*Claim 2*). Rather, the features of these claims had been disclosed as alternatives.

VII. Oral proceedings were held before the Board on 20 October 2006.

(1) At the beginning of the oral proceedings, the Appellant confirmed its requests submitted in writing that the decision under appeal be set aside and that the patent in suit be revoked in its entirety.

By contrast, the Respondent confirmed its requests that the decision under appeal be set aside and that the patent in suit be maintained on the basis of the Main Request comprising Claims 1 to 25 or, in the alternative, on the basis of the claims according to one of Auxiliary Requests I, II or III, all filed with the letter dated 23 February 2004.

Furthermore, the Respondent requested that the additional documents cited by the Opponent/Appellant (sections IV(2) and VI, above) be considered as late filed and not be introduced into the proceedings. If, however, the Board would consider one or more of these additional documents as sufficiently relevant to

introduce them into the proceedings, the case should be remitted to the Opposition Division.

(2) After the discussion in depth about the questions of relevance and of admittance of these late-filed documents to the proceedings, in which the parties had confirmed their opposite positions, the Board informed the parties that the decision on these issues would be postponed until sets of claims were available which had been amended to comply with the following preliminary, provisional remarks of the Board, which concerned, in the first place, the Main Request:

"The retyped version of this request differs from the version as maintained in the decision under appeal by some clerical errors in Claims 1, 16 and 18. Therefore, it would appear to be more appropriate to continue on the basis of the claims as maintained.

Claims 19 and 20 as granted and as contained in the Main Request do not distinguish between the homo- and copolymers claimed. They have not been adapted to the new wording of Claim 1.

Moreover, in view of the wording on page 9 of the initial WO publication, Claim 19 does not comply with Article 123(2) EPC.

In Claim 1, different requirements as to the total xylene solubles content are defined depending on the type of polymer produced. According to the Summary of the Invention, paragraph [0010] of the specification, these ranges are linked to certain monomer compositions of the polymers defined in terms of percentages. In the

more detailed description of these embodiments in paragraph [0026], these polymers are then referred to as homopolymers and copolymers, respectively. Since, in principle, the term 'homopolymer' excludes the presence of any comonomer in the polymer, and there is no disclosure that the range of total xylene solubles contents would be valid for 'copolymers' of any composition, Claim 1 appears to require amendment according to the definitions in paragraph [0010].

Claims 9 to 15 and 18 relate to propylene polymers and compositions suitable for extrusion coating and extrusion coated articles, respectively. The propylene polymers are defined in these claims only in terms of their monomer compositions, their MFR values and their xylene solubles contents.

This means that these claims do not exclude products obtained by a polymerisation process other than the gas phase fluidised bed polymerisation process of Claim 1 or by a further processing process, contrary to the first statement in the description reading 'The present invention relates to the process for the gas-phase production of polypropylene that is generally useful for extrusion coating and to the polypropylene produced thereby.'

Moreover, paragraph [0002] of the printed specification indicates that 'the polypropylene used for extrusion coating is generally produced by either solution or slurry process.' And according to paragraph [0009], 'it would be very desirable to be able to produce by gas-phase technology an extrusion coatable polypropylene. This is particularly true if the gas-phase produced

polypropylene has properties comparable to extrusion coatable polypropylene produced by prior methods, but yet is more economical.'".

(3) Whilst the Appellant agreed to these remarks, the Respondent stated that the clerical errors could be removed from the claims of the Main Request. As regards the further issues, the Respondent stated, however, that this request would not be commented on any further.

(4) The hearing was interrupted and then, after deliberation of the Board, the decision on the Main Request was given.

(5) At the beginning of the discussion concerning the auxiliary requests, the Respondent filed a further Auxiliary Request IV and withdrew its previous Auxiliary Requests I to III (section V(3), above). This new Auxiliary Request IV differed from the previous Auxiliary Request III only by the deletion of Claims 9 to 21. Upon a remark of the Chairman that the deficiencies of Claim 1 would apparently be the same as in the Main Request, the Respondent stated that it had inadvertently used the wrong previous auxiliary request as the basis for this new request, and it requested that it be given the opportunity to replace this set of claims, whilst the Appellant argued that such a new request should be regarded as late-filed and, therefore, should not be admitted.

The Appellant filed copies of pages containing the previous Auxiliary Request II (section V(3), above), now referred to as new Auxiliary Request I. This auxiliary request comprised Claims 1 to 8 only without

any further modification, whilst previous Claims 9 to 25 had been cancelled. The Appellant argued, in favour for the admittance of this request, that the subject-matter of these claims had already been known to the Appellant, who could not, therefore, be taken by surprise. Moreover, this amendment had been triggered by the remarks of the Board and the arguments of the Appellant, which were to be met by the modified request. At the same time, it made clear that Auxiliary Request IV was also withdrawn.

(6) The Board admitted the request to the proceedings and invited the Appellant to present its case with regard to the compliance of this request with Articles 123(2) and (3) EPC. In the further discussion, the attention of the parties was additionally drawn to the fact that Article 84 EPC might be invoked by the Board with regard to the amendments of Claim 1.

(7) At first, the Appellant reiterated its objection against the dependency of Claim 3 to Claim 2 along the lines as referred to in sections IV(3) and VI, above. More particularly, it referred to the fact that, whilst in Claim 2 the H_2/C_3 ratio (used here as an abbreviation for "hydrogen/propylene molar ratio", the other *molar ratios* mentioned in the patent in suit will be abbreviated herein similarly) was to be between 0.02 and 0.14, when the comonomer was 1-butene, 1-hexene or 4-methyl-1-pentene, in Claim 3 however, the H_2/C_3 ratio could be between 0.02 and 0.16 when the same monomers were present (though in smaller amounts). The Appellant assumed that Claim 2 had been drafted to further define the preparation of the "copolymers" (*page 7, lines 21 to 30*) in the sense of their explanation on *page 3,*

lines 18 to 24, whereas Claim 3 had been worded to address the preparation of the "homopolymers" in accordance with the alternative embodiment disclosed on *from page 7, line 31 to page 8, line 3*.

(8) Furthermore, the Appellant argued that the new version of Claim 1 included a situation, which had had no antecedent in the application as originally filed and also extended beyond the scope of protection which had been conferred by the granted version of the patent in suit. In other words, Claim 1 contravened Article 123(2) and (3) EPC.

Thus, the claim would include elaborations within the combinations of process features defined in the first part of Claim 1, which would result in polymers not fulfilling the requirements of the products as defined in the second part of the claim eg containing more than 8 mol% of the comonomer. The Appellant saw this opinion further confirmed by Claim 2 according to which the C_2/C_3 ratio (ethylene/propylene molar ratio) had to be limited to no more than 0.055, in order to obtain polymers within the product definitions in Claim 1, ie having a maximum content of 8 mol % of ethylene.

(9) By contrast, the Respondent took the view, that the scope of Claim 1 was clearly limited to the manufacture of polymers within the definitions of the products in the second part of Claim 1, and it argued that the reactivity of an α-olefin used as a comonomer was lower, the longer its carbon chain was. Consequently, for a given comonomer/C_3 ratio, the content of the comonomer in the copolymer would decrease with an increase of its chain length. Therefore, the range of 0 to 0.33 of the

comonomer/C_3 ratio would be consistent with the two definitions of the polymers in the second part of the claim. In other words, these definitions of the polymers would be limiting features of the claim. Furthermore, it expressed its agreement with the decision under appeal in this respect (Nos. 1 to 1.5 of the reasons).

(10) Then the discussion was closed, because, upon invitation by the Board, the parties did not want to make further submissions and, after deliberation the final decision was given.

VIII. In its final request, the Appellant requested that the decision under appeal be set aside and that the patent in suit be revoked.

The Respondent requested that the decision under appeal be set aside and the patent be maintained on the basis of the Main Request comprising Claims 1 to 25 as filed with the letter dated 23 February 2004 or, in the alternative, on the basis of Auxiliary Request I comprising Claims 1 to 8 filed at the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.

2. Having regard to the objections raised by the Appellant under Article 100(c) EPC and with regard to the requirements of Articles 123(2) and (3) EPC, it is appropriate initially to recall the sequence of

amendments of the claims carried out at the different stages of the proceedings before the EPO.

2.1 *Claim 1*

2.1.1 In WO-A-93/09150, *Claim 1* had contained only process features, but no product features.

2.1.2 After several intermediate reformulations of Claim 1 in the course of the examination proceedings, all of which versions additionally contained product features, a new version of this claim was filed with a letter dated 18 September 1997. For this version of the claim which was then included in the patent as granted as [Claim 1] (see section I, above), an explanation was given in the above letter (page 1, last paragraph to page 3, paragraph 1), including the remark that the polymers resulting from the process of Claim 1 would have a XS between 4 and 35 wt%, "depending on the amount of alpha-olefin present in the polypropylene composition".

2.1.3 The XS range in [Claim 1] was, however, further amended during the subsequent opposition proceedings, *viz.* by distinguishing between the XS ranges of the "propylene homopolymer" and the "propylene copolymer", when the Opposition Division had decided in the oral proceedings that [Claim 1] had violated Article 123(2) EPC (cf. section II(7), above and the decision under appeal: page 5, paragraph 2 *et seq.*). Claim 1, thus amended, of the new Main Request (section II(7), above) was found to comply with Article 123(2) EPC (section III(1), above) and, apart from a typing error introduced upon retyping (section V(3), above), is still contained in the Main Request under consideration in this appeal.

2.1.4 In the Statement of Grounds of Appeal, the objection under Article 123(2) EPC was, however, further pursued by the Appellant (section IV(3), above). This led to the filing of three auxiliary requests, all of which, including Auxiliary Request II, were, however, withdrawn by the Respondent at the hearing. However, Auxiliary Request II formed the basis for the new Auxiliary Request I (sections V(3), and VII(5), above).

2.2 *Further claims*

2.2.1 Initially, *Claim 3* had been appendant to *Claim 1*. However, in the set of claims filed with the Applicant's letter of 18 September 1997, it was made appendant to Claim 2. This was deemed allowable by the Applicant, because it had seen no reason to make a distinction between "homopolymer" or "near homopolymer" on the one hand, and "copolymer" on the other hand, since both types could generically be described with the formulation of the then valid version of Claim 1 (cf. sections I and 2.1.2, above).

2.2.2 Furthermore, with a letter dated 11 April 1996, Claims 19 to 25, which had had no antecedent in previous sets of claims, were added to a new set of claims. Apart from the deletion of the term "about" from the limits of the percentage range in Claim 19, this claim remained unchanged for the rest of the proceedings.

2.3 As shown in sections II(7) and III(1), above, the additional ground for opposition under Article 100(c) EPC, raised by the Opponent in the letter of 3 February 2003 (ie after the nine-month opposition period), has

been introduced in the proceedings by the Opposition Division in accordance with Article 114(1) EPC (cf. the Opinion of the Enlarged Board of Appeal G 10/91; OJ EPO 1993, 420, No. 2 of the conclusion). Consequently, this issue is also to be considered in these appeal proceedings (Articles 106(1) and 110(1) EPC).

Main Request

3. The set of claims as maintained by the Opposition Division has been replaced by a retyped version (section V(3), above), which suffers of some clerical errors (section VII(2), above). However, they have not been corrected.

3.1 In each of Claims 16 and 18, the upper limit of the α-olefin content in the polypropylene according to feature (I) has been changed from "0.2" to "2 mol-%". This limit finds no support in the text of the application as filed from which the patent in suit has been derived. Consequently, both amendments of these claims violate Article 123(2) EPC.

3.2 As shown in the preceding paragraphs (sections 2.1.1 to 2.1.4, above), the definition of the claimed process of Claim 1 was repeatedly amended, at first by incorporation of product features to be achieved, and later, in particular, with respect to the different upper limits of the XS of the two kinds of products ("homopolymer" and "copolymer"), respectively. Thus, Claim 1 distinguishes between XS of "between 4 and 35 weight percent when the polypropylene produced is a copolymer, and between 4 and 12 weight percent when the polypropylene produced is a homopolymer".

However, Claim 19 has never been amended to reflect these amendments.

Claim 19 had no antecedent in the *initial set of claims*, but had been added with a reference to the passage on *page 8, line 30 to page 9, line 16* (before grant; letter dated 11 April 1996: page 1, penultimate paragraph and page 3, paragraph "(5)")). A closer view to this passage demonstrates, however, that a XS range of between 6 and 15 % by weight can only be derived therefrom for the "copolymer", but not for the "homopolymer" and its preparation to which Claim 19 also relates.

Consequently, Claim 19 violates Article 100(c) EPC, so that, for this reason alone, the Main Request cannot succeed.

3.3 Whilst the Respondent argued with regard to the above amended wording in Claim 1, that sufficient support therefor would be given on *page 8, line 30, to page 9, line 5 and lines 17 to 18* (letter of 23 February 2004, item II. a)), the Board rather takes the same view as Appellant (section VI, above), that the terms used on *pages 8 and 9*, which are part of the "Detailed Description of the Invention" are, in fact, "merely abbreviated versions of and refer to the more exact definitions ... as given eg on page 3, lines 18 to 21 and page 3, lines 24 to 27, or in claims 9 and 11". In other words, the disclosure on *pages 8 and 9* is subordinate to the disclosure in the "Summary of the Invention" given on *page 3*. Therefore, it cannot

broaden the definitions as given on *page 3* to any copolymers.

This finding has already been addressed by the Board in the preliminary, provisional remarks given at the beginning of the oral proceedings (section VII(2), above), with reference to paragraphs [0010] and [0026], derived from those passages on *pages 3/4 and 8/9*, respectively. More particularly, the term of "homopolymer" as normally understood by a skilled person does not include a "near homopolymer" (see section 2.2.1, above) as intended by the Respondent. Apart from this, the term of "copolymer" is not clearly and unambiguously limited with regard to the maximum amount of comonomer moieties incorporated into the polymer.

Consequently, Claim 1 contravenes Article 100(c) EPC, because the specific XS ranges were initially disclosed only in the context of those polymer definitions on *page 3, lines 18 to 29*. This finding is even further confirmed by *page 4, lines 25 to 29* ("The polypropylene composition unexpectedly has a melt flow rate between 20 and 150 g/10 min at 230°C and a total xylene solubles content *between 4 and 35 wt % (homopolymer between 4 and 12 wt %)* and can be used in extrusion coating.") (emphasis added by the Board).

3.4 Consequently, the Main Request must be refused for violation of Articles 100(c) and 123(2) EPC, respectively.

Auxiliary Request I

4. In Claim 1 of this request, the above deficiencies concerning the lack of basis of the different XS ranges for the different polymer products has been remedied by incorporation of the respective limitations of the terms of "homopolymers" and "copolymers" from *page 3* into the claim.

4.1 However, as pointed out by the Appellant at the oral proceedings (section VII(8), above), Claim 1 defines a process by a number of process features and continues that, when a polypropylene containing 0 to 0.2 mol-% of the α-olefin comonomer is obtained, the XS must be between 4 and 12 weight percent, whereas, when the resulting polypropylene contains between 0.2 to 8 mol-% of the comonomer, the XS must be between 4 and 35 weight percent. Moreover, in both cases, the MFR has to be a value of between 20 and 150 g/10 min at 230°C.

Whilst the Respondent took the view that these product features would be limitative, the Appellant was of the opinion that these features described only two, however, non-definite elaborations of the process.

In particular in view of the wording of Claim 1 and even more in view of the above slight rearrangement of the wording of the second part of Claim 1 and in view of the wording of Claim 2 (cf. section I, above) as referred to by the Appellant in the discussion of this issue (section VII(8), above), the Board cannot concur with the Respondent's interpretation of the claim (section VII(9), above).

Rather, the Board takes the view that the present wording of Claim 1 defines a number of process features, which *may* result in polypropylene compositions which fulfil the definitions in the second part of the claim, but only in specific circumstances (eg as explained in either Claim 2 or Claim 3 referring to particular H_2/C_3 and α-olefin/C_3 ratios). Besides, other polymers containing more than 8 mol-% of comonomer will apparently be obtained, in particular under other conditions, eg when using propylene and ethylene in a C_2/C_3 molar ratio of more than 0.055 (Claim 2), or even as high as 0.33 (as included in the first part of the claim). However, such polymers beyond a comonomer content of more than 8 mol-% have nowhere and never been considered, let alone disclosed in the application as filed.

Consequently, Claim 1 extends beyond the content of the application as filed (Article 123(2) EPC).

4.2 Moreover, due to the above conditional limitations in the second part of Claim 1 ("and wherein said polypropylene composition ... when ..., and ... when ..."), the claim additionally extends the protection conferred by the patent in suit as granted, thereby additionally contravening Article 123(3) EPC for the following reason:

Thus, the limitations of the XS to from 4 to 12 and from 4 to 35 weight percent, respectively, concern only those polymers containing from 0 to 0.2 and from 0.2 to 8 weight percent of an α-olefin comonomer, respectively. However, as shown before (section 4.1, above), the claim extends to polymers beyond these quantitative

limitations, which, consequently, are not restricted, apart from their MFR, in regard to their XS either.

4.3 Furthermore, the Board, in consideration of the arguments of the Appellant (section VII(7), above), in particular in view of the inconsistency between the different upper limits of the H_2/C_3 ratios in the copolymerisations of propylene with butene-1, hexene-1 or 4-methyl-1-pentene in Claims 2 and 3, has come to the conclusion that Claim 3 never related to a particular elaboration of the subject-matter of Claim 2. This has further been confirmed by the description of the two embodiments as alternatives on *page 7*. It follows that this amendment of the dependency in Claim 3 prior to the grant of the patent in suit has had no basis in the application as filed Article 100(c) EPC).

4.4 Consequently, Auxiliary Request I cannot prevail for the reason of violations of Articles 100(c), 123(2) and 123(3) EPC.

5. Since the other auxiliary requests have been withdrawn before the filing of the above Auxiliary Request I, there are no further requests to be taken into account.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

E. Görgmaier R. Young