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Datasheet for the decision of 14 April 2021

Case Number: T 0363/17 - 3.3.03

Application Number: 09706717.7

Publication Number: 2188100

IPC: B29C45/00, C08F10/02, C08L23/08, C08F210/16

Language of the proceedings: EN

Title of invention:
POLYETHYLENE COMPOSITIONS, METHOD OF PRODUCING THE SAME, ARTICLES MADE THEREFROM, AND METHOD MAKING THE SAME

Patent Proprietor:
Dow Global Technologies LLC

Opponents:
Borealis AG
Total Research & Technology Feluy
SABIC Petrochemicals B.V.

Relevant legal provisions:
EPC Art. 54, 56
RPBA Art. 12(4)

Keyword:
Novelty - (main request and several auxiliary requests: no)
Inventive step - (several auxiliary requests: no)
Late-filed requests - admitted (auxiliary requests 7-14: yes)

Decisions cited:
G 0001/03

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Case Number: T 0363/17 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 14 April 2021

Appellant 1: (Patent Proprietor)	Dow Global Technologies LLC 2040 Dow Center Midland, MI 48674 (US)
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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted on 8 December 2016 concerning maintenance of the European Patent No. 2188100 in amended form.**

Composition of the Board:

Chairman D. Semino
Members: O. Dury
W. Ungler

Summary of Facts and Submissions

I. The appeals by the patent proprietor and opponents 2 and 3 lie from the interlocutory decision of the opposition division posted on 8 December 2016 concerning maintenance of European Patent No. 2 188 100 in amended form according to the claims of auxiliary request 1 filed during the oral proceedings of 27 October 2016 and an amended description.

II. Three notices of opposition to the patent were filed requesting revocation of the patent in its entirety.

III. In the decision under appeal the following documents were *inter alia* cited:

T1: US 7 078 467
T2: US 2006/0155080
S4: WO 2008/097422

IV. The decision under appeal was based on the main request filed with letter of 8 October 2014 and on auxiliary request 1 filed during the oral proceedings of 27 October 2016.

Claim 1 of the main request read as follows:

"1. A polyethylene composition comprising:

less than 100 percent by weight of units derived from ethylene;

less than 15 percent by weight of units derived from one or more α-olefin comonomers;

wherein said polyethylene composition has a density in the range of 0.930 to 0.975 g/cm^3,

a molecular weight distribution (M_w/M_n) in the range of 1.70 to 3.62,

a melt index (I_2) in the range of 2 to 1000 g/10 minutes,

a molecular weight distribution (M_z/M_w) in the range of less than 2.5,

vinyl unsaturation of less than 0.06 vinyls per one thousand carbon atoms present in the backbone of said composition, and wherein;

(i) said polyethylene composition has a short chain branching distribution breadth (SCBDB) expressed in °C of less than or equal to [0.025(I_2)+4.08], wherein I_2 is melt index expressed in g/10 min, and wherein said composition has a density in the range of equal or greater than 0.930 g/cm^3 to less than 0.940 g/cm^3,

or

(ii) said polyethylene composition has a short chain branching distribution breadth (SCBDB) expressed in °C of less than or equal to [0.0312(I_2)+2.87], wherein I_2 is melt index expressed in g/10 min, and wherein said composition has a density in the range of equal or greater than 0.940 g/cm^3."

Claim 16 of the main request was directed to an injection molded article comprising a polyethylene composition defined according to claim 1.

Claim 1 of auxiliary request 1 differed from claim 1 of the main request in that the following features were added at the end of the claim:

"wherein said polyethylene composition has less than 2 peaks on an elution temperature-eluted amount curve determined by continuous temperature rising elution fraction method at equal or above 30°C., wherein the purge peak which is below 30°C is excluded."

V. The decision of the opposition division, as far as relevant to the present decision, can be summarised as follows:

- Document T1 failed to disclose several parameters mentioned in claim 1 of the main request. In addition, considering the numerous differences between the process conditions used in examples 3 to 6 of the patent in suit and the ones used in run 20 of T1, it could not be concluded in view of the evidence on file that the polymer composition of run 20 of T1 inevitably satisfied the parameters specified in claim 1 (section 3.1.4.4 of the reasons of the decision). Therefore, the subject-matter of claim 1 of the main request was novel over run 20 of T1;

- The subject-matter of claim 1 of said main request was not inventive starting from document T2 as closest prior art. In that respect, document T2 had to be considered as closest prior art and the other documents contemplated by the opponents, in particular T1, were not as suitable as T2 (section 3.1.5.1 of the reasons of the decision);

- The subject-matter of claim 1 of auxiliary request 1 was inventive starting from T2 as closest prior art.

In view of the above, the patent was maintained in amended form on the basis of auxiliary request 1. As a consequence, there was no need for the opposition division to deal with pending auxiliary requests 2 to 6, which corresponded to auxiliary requests 1 to 3 filed with letter of 8 October 2014 and auxiliary requests 4 and 5 filed with letter of 19 October 2016.

VI. The patent proprietor (appellant 1) lodged an appeal against the above decision and, in its statement of grounds of appeal, requested that the decision of the opposition division be set aside and the patent be maintained in amended form on the basis of either the main request filed therewith (which corresponded to the main request dealt with in the contested decision) or in the alternative, of auxiliary request 1 allowed by the opposition division.

VII. Opponents 2 and 3 (appellants 2 and 3) both lodged an appeal against the above decision and requested in their statement of grounds of appeal that the decision of the opposition division be set aside and the patent be revoked.

VIII. In its reply to the statement of grounds of appeal of appellant 1 opponent 1 (respondent and party as of right) requested that the patent proprietor's appeal be dismissed.

IX. With its reply to the statements of grounds of appeal of appellants 2 and 3 dated 4 September 2017, appellant 1 additionally requested that the patent be

maintained in amended form according to any of auxiliary requests 1 to 11 filed therewith, whereby auxiliary requests 1 to 6 corresponded to auxiliary requests 1 to 6 defended in the opposition proceedings.

X. Together with the summons to oral proceedings, a communication was issued by the Board in preparation of the oral proceedings.

It was in particular indicated in respect of the assessment of novelty over T1 (section 8.2 of the communication) that it appeared that it could be agreed with appellant 1 that only examples 16 and 20 of Tl were related to ethylene copolymers exhibiting a density and a melt index I_2 in the ranges specified in claim 1 of the main request. For these two examples 16 and 20, although it was correct that the processes described in Tl exhibited some differences with the processes used in examples 1-6 of the patent in suit, it appeared that these processes of Tl were carried out in agreement with the teaching of the general description of the patent in suit. Under such circumstances it appeared that either the missing parameters were implicitly disclosed in Tl or, if this were not to be the case, the question would have to be posed if the requirements of sufficiency of disclosure would still be met (since examples 16 and 20 of Tl would show that working according to the teaching of the patent in suit did not mandatorily lead to a polyethylene composition according to operative claim 1).

Regarding the assessment of inventive step (section 9.1.2), the parties were informed that they should be prepared to discuss inventive step starting from T1 as closest prior art at the oral proceedings.

In that respect, noting that T1 did not appear to deal with the problems aimed at in the patent in suit (see paragraphs 6 and 98) whereas T2 did (paragraph 9; Table 3), it could have *inter alia* to be discussed whether the skilled person aiming at solving said problems would effectively consider starting from T1 rather than T2 or whether this would only be done based on hindsight i.e. knowing the solution proposed by the patent in suit.

XI. With letter of 28 February 2020 appellant 2 requested that auxiliary requests 7 to 11 not be admitted into the proceedings.

XII. With letter of 17 March 2020 appellant 1 submitted new auxiliary requests 1 to 3 which were to be dealt with directly after the main request, whereby the then pending auxiliary requests 1 to 11 were resubmitted and renumbered as auxiliary requests 4 to 14.

Claim 1 of auxiliary request 1 was identical to claim 1 of the main request.

Claim 1 of auxiliary requests 2 and 3 corresponded to claim 1 of the main request wherein the upper end of the range of melt index was amended to 300 g/10 minutes (instead of 1000 g/10 minutes).

Claim 1 of auxiliary request 4 was identical to claim 1 of auxiliary request 1 dealt with in the decision under appeal (see section IV above).

Claim 1 of auxiliary requests 5 and 6 corresponded to claim 1 of the main request wherein the range of vinyl unsaturation was amended to "less than 0.04 vinyls per one thousand carbon atoms" and "less than 0.02 vinyls

per one thousand carbon atoms", respectively (instead of "less than 0.06 vinyls per one thousand carbon atoms").

Claim 1 of auxiliary request 7 corresponded to claim 1 of the main request wherein it was further indicated at the beginning of the claim that the polyethylene composition being claimed was "substantially free of long chain branching".

Claim 1 of auxiliary request 8 was identical to claim 16 of the main request.

Claim 1 of auxiliary request 9 corresponded to claim 1 of auxiliary request 8 wherein the range of vinyl unsaturation was amended to "less than 0.02 vinyls per one thousand carbon atoms" (instead of "less than 0.06 vinyls per one thousand carbon atoms").

Claim 1 of auxiliary requests 10 to 12 corresponded to claim 1 of the main request, which was further amended in the same manner as claim 1 of auxiliary request 4 (less than 2 peaks...) in combination with the amendment made in claim 1 of auxiliary requests 5 (less than 0.04 vinyls), 6 (less than 0.02 vinyls) and 7 (substantially free of long chain branching), respectively.

Claim 1 of auxiliary requests 13 and 14 corresponded to claim 1 of auxiliary request 8 and 9, respectively, wherein the definition of the polyethylene composition was further amended in the same manner as in claim 1 of auxiliary request 4 (less than 2 peaks...).

XIII. With the explicit agreement of all parties, oral proceedings were held on 14 April 2021 in the form of a

videoconference (the Board was at the premises in Haar and the parties were connected via video link), whereby the respondent (opponent 1) was not represented, as announced by letter of 13 April 2021.

During the oral proceedings, appellant 2 requested that auxiliary requests 7 to 14 not be admitted into the proceedings.

XIV. The arguments of appellant 1, as far as relevant to the present decision, were essentially as follows:

Main request - Novelty over run 20 of T1

(a) Document T1 failed to disclose any information for run 20 regarding four of the parameters mentioned in claim 1 of the main request, namely M_w/M_n, M_z/M_w, the amount of vinyl unsaturations and the inequality between SCBDB and I_2.

In view of the differences between the process conditions used in example 3 of the patent in suit and the ones used in run 20 of T1 (nature of the leaving group of the catalyst, amount of comonomer, use or not of isopentane, ethylene partial pressure, amount of hydrogen), it could not be concluded that the polymer composition of run 20 of T1 inevitably satisfied the parameters specified in claim 1 which were not disclosed in T1. It was further shown in S4 that some of the conditions modified in run 20 of T1 as compared to example 3 of the patent in suit could have an effect on the composition distribution. Although S4 was not common general knowledge in view of its publication date, it showed that the differences in process conditions indicated above could lead to the

preparation of products having different properties. In addition it was disclosed in T1 that the polyethylene prepared therein could have M_w/M_n values outside the range defined in claim 1.

The fact that the process conditions used in run 20 of T1 were in line with the teaching of the patent in suit was not sufficient to ensure that the combination of parameters specified in claim 1 of the main request was mandatorily obtained. The information provided in the patent in suit rather gave indication regarding the conditions that could be used to achieve such a combination of parameters, e.g. how the conditions used in the examples of the patent in suit illustrative of the subject-matter being claimed could be varied in order to obtain a polyethylene composition as claimed. In any case, the fact that it was argued that said combination was not obtained in run 20 of T1 also did not point to a lack of sufficiency of disclosure since the examples of the patent in suit undoubtedly showed how to prepare the compositions being claimed and the patent specification further provided sufficient information how these conditions could be modified in order to prepare other compositions within the claimed range.

Furthermore, although according to established case law the burden of proof for lack of novelty was on the opponents, no evidence was on file to show that the parameters specified in operative claim 1 which were not disclosed in T1 were effectively satisfied.

For these reasons, the subject-matter of claim 1 of

the main request was novel over run 20 of T1.

Auxiliary requests 1 to 6

(b) At the oral proceedings before the Board, it was agreed that regarding novelty over run 20 of T1, the same conclusion as the one reached for claim 1 of the main request was also valid for claim 1 of each of auxiliary requests 1 to 3. In addition, questioned by the Board, appellant 1 declared that they had no additional argument in respect of novelty over run 20 of T1 as far as auxiliary requests 4 to 6 were concerned.

Admittance of auxiliary requests 7 to 14

(c) Auxiliary requests 7 to 14 corresponded to auxiliary requests 4 to 11 filed with the rejoinder of appellant 1 to the statement of grounds of appeal of appellants 2 and 3, i.e. at the beginning of the appeal proceedings. Auxiliary requests 7 to 9 further corresponded to requests which were already filed during the opposition proceedings but which did not have to be dealt with in view of the decision reached by the opposition division in respect of a higher ranked request. The claims of auxiliary requests 10 to 14 only differed from higher ranked requests in that they were amended by addition of the feature (less than 2 peaks) which was considered by the opposition division to confer an inventive step to the then valid auxiliary request 1 (contrary to the conclusion reached for the then valid main request). For these reasons, auxiliary requests 7 to 14 should be admitted into the proceedings.

Auxiliary request 7 - Novelty

(d) According to paragraph 56 of the patent in suit, "substantially free of long chain branching" meant an amount of long chain branching of at most 0.01 long chain branching per thousand carbon atoms. At the oral proceedings before the Board, it was stated that, although this was not indicated in the patent in suit, the polyethylene composition prepared in example 3 thereof satisfied the requirement in terms of long chain branching defined in paragraph 56. However, T1 did not provide any information regarding long chain branching, let alone the amount thereof. Considering that also in that respect the burden of proof to show that said feature was satisfied by the polyethylene prepared in run 20 of T1 was on the opponents and in the absence of any evidence that said feature was inevitably satisfied in said run 20, novelty should be acknowledged.

Auxiliary request 8 - Novelty

(e) Although T1 disclosed that the compositions taught therein could be used for rotomolding and injection molding, it was not indicated therein that the composition prepared in run 20 was effectively used to prepare any article, let alone an injection molded article. Therefore, the subject-matter of claim 1 of auxiliary request 8 was novel over run 20 of T1, as well as over T1 as a whole.

Auxiliary request 8 - Inventive step

(f) The first step of the problem-solution approach was to determine "the" closest prior art, i.e. to

identify a single document constituting the most promising starting point for the skilled person aiming at solving the problems indicated in the patent in suit. In that respect, the aim of the patent in suit was to provide polyethylene compositions which had improved impact resistance while maintaining stiffness and processability properties. However, contrary to T2, T1 did not deal with these aims and was rather concerned with providing a process for the production of a variety of different polyethylenes without changing the catalyst composition or with providing a method for transitioning within a single reactor from a first polyethylene product to a second polyethylene product. Choosing T1 as closest prior art would only be considered based on hindsight, which was not allowable. For these reasons, T2 constituted the closest prior art document. As a consequence, T1 could not be selected as closest prior art.

Even if T1 were to be considered as closest prior art, considering that none of the properties aimed at in the patent in suit were disclosed in the examples of T1, there would be no motivation for one skilled in the art to start from run 20 thereof. Selecting run 20 would again be based on hindsight, in particular on the basis of the knowledge of example 3 of the patent in suit. At the oral proceedings before the Board and following the Board's decision on novelty, T1 was held to constitute at most an "accidental anticipation" of the subject-matter being claimed.

Although no direct comparison between a composition as claimed with a composition prepared according to run 20 of T1 was made, the improvement in terms of

impact resistance while maintaining stiffness and processability properties was demonstrated by the comparison of the examples and the related comparative examples of the patent in suit as well as in the figures of the patent in suit.

Should the skilled person start from run 20 of T1, there would be no motivation to consider changing any of the properties specified in claim 1 of auxiliary request 8 which were not known from T1 itself. In particular, run 20 was not concerned with the properties of the composition so prepared but only illustrative of the transitioning procedure.

For these reasons, the subject-matter of claim 1 of auxiliary request 8 was not obvious in light of T1 and should be acknowledged an inventive step.

Auxiliary requests 9 to 14

(g) Questioned by the Board, appellant 1 declared during the oral proceedings that, as far as auxiliary requests 9, 13 and 14 were concerned, they had no additional argument (as compared to auxiliary request 8) in respect of inventive step.

Similarly, no further arguments were put forward regarding novelty of the subject-matter of claim 1 of auxiliary requests 10 to 12 over run 20 of T1.

XV. The arguments of appellants 2 and 3 and of the respondent, as far as relevant to the present decision, may be summarised as follows:

Main request - Novelty over run 20 of T1

(a) It was correct that T1 did not explicitly disclose that the requirements in terms of parameters M_w/M_n, M_z/M_w, amount of vinyl unsaturations and regarding whether the inequality between SCBDB and MI_2 mentioned in claim 1 of the main request was satisfied by the composition prepared in run 20.

However, the process conditions used in run 20 of T1 were completely in line with the teaching of the patent in suit regarding how the compositions being claimed should be obtained. The working conditions of run 20 were even according to the most preferred embodiments taught in the patent specification. In addition, the process conditions used in run 20 of T1 were very similar to the ones used in example 3 of the patent in suit. Since the product so prepared had very similar densities and melt index, their production process could be fairly compared to assess whether it could be expected that the differences in process conditions between both examples had any impact on the characteristics of the polyethylene composition so prepared. In doing so, although there were some differences between the processes carried out in run 20 of T1 and in example 3 of the patent in suit, it could neither be expected based on common general knowledge that these differences would lead to significant differences in the above indicated four parameters, nor had any argument or evidence in that respect been provided by appellant 1. In particular, the information provided in S4 showed that said differences in the process conditions would, if at all, lead to a narrowing of the short chain branching distribution i.e. a lower value of SCBDB.

The different leaving group of the catalyst was known to possibly have an effect on the productivity of the process but it had no impact on the properties of the polyethylene produced therewith since the catalytic site was the same.

Should it be concluded that the combination of features according to claim 1 of the main request was not achieved in run 20 of T1, although the preparation conditions were according to the teaching of the patent in suit, the requirements of sufficiency of disclosure would not be met.

In view of the above, there was no reason to expect that the polymer composition prepared in run 20 of T1 did not satisfy the requirements in terms of specified in claim 1 of the main request. Under such circumstances, the burden of proof should be shifted to appellant 1.

For these reasons, the subject-matter of claim 1 of the main request was not novel over run 20 of T1.

Auxiliary requests 1 to 6

(b) At the oral proceedings before the Board, it was agreed that regarding novelty over run 20 of T1, the same conclusion as the one reached for claim 1 of the main request was also valid for claim 1 of each of auxiliary requests 1 to 3. In addition, questioned by the Board, appellants 2 and 3 declared that they had no additional argument in respect of novelty over run 20 of T1 as far as auxiliary requests 4 to 6 were concerned.

(c) In its sole written submission (letter of 21 August 2017) opponent 3 did not address any of the auxiliary requests defended in appeal by appellant 1 and only objected to the inventive step of the main request starting from T2 as closest prior art.

Admittance of auxiliary requests 7 to 14

(d) At the oral proceedings before the Board, appellant 2 requested that auxiliary requests 7 to 14 not be admitted into the proceedings because these auxiliary requests were not discussed in front of the opposition division. In addition, they were directed to divergent sets of claims and raised new issues in respect of Article 123(2) EPC.

Auxiliary request 7 - Novelty

(e) The acknowledgement by appellant 1 during the oral proceedings before the Board that example 3 of the patent in suit was "substantially free of long chain branching" was noted. Considering that the amount of long chain branching was primarily dictated by the type of catalyst used and that catalysts having the same catalytic site were used in run 20 of T1 and in example 3 of the patent in suit, the subject-matter of claim 1 of auxiliary request 7 lacked novelty over run 20 of T1 for the same reasons as claim 1 of the main request.

Auxiliary request 8 - Novelty

(f) The compositions taught in T1 were recommended therein for injection molding applications. Since that consideration also applied to the composition

prepared in run 20 of T1, the subject-matter of claim 1 of auxiliary request 8 was not novel over run 20 of T1 or at least over T1 as a whole.

Auxiliary request 8 - Inventive step

(g) T1 was a suitable closest prior art document because it was related to injection moulding, as was the patent in suit and auxiliary request 8 in particular. In addition, T1 also aimed, as the patent in suit, at balancing impact, stiffness and processability by increasing density to improve stiffness at the detriment of impact as well as increasing melt index to improve processability/ flow. In particular, any composition prepared in the examples of T1, including run 20, was a particularly relevant starting point for the assessment of the inventive step.

In view of the above, there was no reason to consider that T2 was a more suitable closest prior art than T1. In any case, according to accepted case law, the fact that T2 might be another suitable starting point for the assessment of inventive step was not a valid reason for disregarding T1 as a suitable starting point. It was not correct to consider that the first step of the problem-solution approach was to identify a single document as constituting "the" closest prior art, thereby excluding any other document as a suitable alternative.

The subject-matter of claim 1 of auxiliary request 8 differed from run 20 of T1 only in that it was directed to an injection molded article.

None of the examples of the patent in suit illustrated articles made by injection molding. In addition, since the comparison in the patent in suit was made between compositions as defined in claim 1 of auxiliary request 8 and compositions which were not illustrative of run 20 of T1, it could not support an improvement over the closest prior art T1. In the absence of any effect related to the above indicated distinguishing feature, the objective problem solved over T1 resided in the mere provision of a specific use for the composition prepared in run 20.

Considering that T1 explicitly taught that the compositions prepared therein were particularly well suited for making injection molded articles, it was obvious to prepare such an article with the composition prepared in run 20 of T1.

For these reasons, the subject-matter of claim 1 of auxiliary request 8 was not inventive.

Auxiliary requests 9 to 14

(h) Questioned by the Board, appellants 2 and 3 declared during the oral proceedings that, as far as auxiliary requests 9, 13 and 14 were concerned, they had no additional arguments (as compared to auxiliary request 8) in respect of inventive step. Similarly, no further arguments (as compared to the main request and auxiliary requests 1 to 7) were put forward regarding novelty of the subject-matter of claim 1 of auxiliary requests 10 to 12 over run 20 of T1.

XVI. Appellant 1 requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the main request filed with the statement of grounds of appeal, or of any of auxiliary requests 1 to 14 filed with letter of 17 March 2020.

Appellants 2 and 3 requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (opponent 1) requested in writing that the patent proprietor's appeal be dismissed.

Reasons for the Decision

Main request

1. Claim 1 - Novelty over run 20 of T1

1.1 Run 20 of T1 discloses a process for the polymerisation of ethylene in a gas phase fluidized bed reactor in the presence of hydrogen and hexene as comonomer and using bis(n-propylcyclopentadienyl)hafnium difluoride as catalyst (T1: column 15, lines 25-31; see also column 12, lines 10-43 for the preparation of the catalyst and table 6 for the process conditions). The ethylene-hexene copolymer so produced has a density of 0.9534 g/cm^3 and a melt index I_2 of 66.5 g/10 minutes (T1: table 6).

1.2 Regarding novelty of claim 1 of the main request over run 20 of T1, the point of dispute between the parties was whether or not the requirements in terms of parameters M_w/M_n, M_z/M_w, amount of vinyl unsaturations and the inequality between SCBDB and I_2 (condition (ii)

since the density of the polyethylene composition is ≥ 940 g/cm^3) as defined in claim 1 of the main request were satisfied for the polyethylene composition prepared in run 20 of T1. Considering that these features are not explicitly disclosed in T1, the question to be answered is if it can be concluded that said four requirements are nevertheless implicitly fulfilled.

1.3 In that respect, it was undisputed that it may be derived from the information provided in Table 6 of T1 that run 20 of T1 was carried out in agreement with the teaching of the general description of the patent in suit regarding how the polyethylene compositions being claimed are prepared, in particular regarding

- the catalyst system (paragraphs 87-91, whereby explicit reference to T1 is made in paragraph 91);

- the reactor and reaction conditions (paragraphs 65-83), in particular regarding the ethylene partial pressure (paragraph 81), the hexene(i.e. comonomer)-ethylene ratio (paragraph 82), hydrogen amount (paragraph 83) and the optional use of inert gases/liquids such as isopentane and continuity additive (none of which is used in run 20 of T1; paragraph 66 of the patent in suit).

1.4 In addition, it may be concluded in view of paragraphs 99-101 and Tables I-III of the patent in suit that run 20 of T1 was carried out under similar conditions to those of example 3 of the patent in suit, whereby the polyethylene composition prepared in said example 3 fulfills all the requirements of claim 1 of the main request and exhibits similar density and melt

flow I_2 to the one prepared in run 20 of T1 (density: 0.9523 g/cm^3 for example 3 vs. 0.9534 g/cm^3 for run 20; I_2: 74.6 g/10 minutes for example 3 vs. 66.5 g/10 minutes for run 20). Although said density and melt index values are not identical, the Board is satisfied that these values are similar enough that both examples may be fairly compared, which was not contested by appellant 1, in particular during the oral proceedings before the Board (see also last paragraph on page 6 of the letter dated 17 March 2020). It is further noted that the process conditions used to carry out run 20 of T1 are not only in line with the more general teaching of the patent in suit but even with the most preferred working conditions taught in the patent in suit, as shown by appellant 2 in the table on pages 7 and 8 of the letter dated 28 February 2020. Although it is correct that said table contains no indication regarding the amount of hydrogen (letter of 17 March 2020 of appellant 1: page 17, penultimate paragraph), the patent in suit was not shown to contain - apart from the information provided in the examples - any limitation in that respect. In addition, the most preferred requirements in terms of the ratio of hydrogen to total ethylene monomer indicated in paragraph 83 of the patent in suit are also satisfied in run 20 of T1 (10.7 in run 20; between 7 and 22 according to paragraph 83). Under these circumstances and further considering that appellant 1 constantly argued that sufficiency of disclosure was given, as was also decided by the opposition division, it can only be concluded that since run 20 of T1 is carried out according to the preferred embodiments taught in the patent in suit, which has to be such as to indicate how to obtained the polyethylene compositions being claimed, it is to be expected that the process conditions used in run 20 of T1 should lead to

polyethylene satisfying the requirements of the patent in suit.

1.5 Appellant 1 argued that since the differences in process conditions between run 20 of T1 and example 3 of the patent in suit were significant, the skilled person would expect that they could nevertheless lead to significantly different composition distribution and molecular weight distribution, whereby the differences in process conditions relied upon by appellant 1 were the nature of the leaving group of the catalyst, the hexene(comonomer)-ethylene ratio, the ethylene partial pressure, the amount of hydrogen and the use of isopentane and of a continuity additive (letter of 17 March 2020: paragraph bridging pages 6 an 7 and submissions made during the oral proceedings before the Board).

1.6 However, in the case in hand, no teaching may be derived from the patent specification how the differences in process conditions between example 3 of the patent in suit and run 20 of T1 relied upon by appellant 1 and identified in section 1.5 above may influence the features of claim 1 of the main request which are not explicitly disclosed in T1 so as to lead to values outside the ranges indicated in claim 1. Rather, there is no indication in the specification that they play any role. In particular, while some of these features are merely indicated as being optional measures (paragraph 66 of the patent in suit regarding isopentane or the continuity additive used in example 3 of the patent in suit but not in run 20 of T1), the other ones are set in run 20 of T1 in line with the most preferred embodiments taught in the patent specification (nature of the leaving group of the catalyst, the hexene(comonomer)-ethylene ratio, the

ethylene partial pressure, the amount of hydrogen). In addition, the patent in suit only contains examples 1 to 6, which illustrate the subject-matter of claim 1 of the main request and were carried out according to the teaching of the patent in suit, and comparative examples directed to various commercial products, which do not satisfy all the features of claim 1 of the main request but for which no information regarding their preparation process is given (paragraphs 102-113 and tables V-VII). Under these circumstance, there is no reason to assume on the basis of the patent specification that working according to the teaching contained therein, in particular the preferred embodiments of the process conditions related to the features relied upon by appellant 1, may lead to polyethylene compositions not according to claim 1 of the main request.

1.7 In what follows each of the features not explicitly disclosed in run 20 of T1 will be analysed in detail taking into account possible reasons which in spite of the previous considerations could lead to values outside the ranges indicated in claim 1.

Regarding the SCBDB feature

1.8 According to appellant 1, in spite of the identified correspondence of the process conditions of run 20 of T1 to those preferred in the patent in suit and in particular to those of example 3 thereof, it was derivable from S4 that process conditions had an influence on the composition distribution of the composition - and therefore on the SCBDB feature feature specified in claim 1 of the main request - even with the use of the same catalyst, in particular when using a condensable agent such as isopentane or by

adjusting the molar ratio of hydrogen to ethylene, the molar ratio of comonomer to ethylene, the partial pressure of ethylene and the reaction temperature. Therefore, it could not be held that the SCBDB requirements defined in claim 1 of the main request were necessarily satisfied in run 20 of T1, so appellant 1.

1.8.1 In that respect, the Board agrees with appellant 1 that although S4 is not a valid prior art (since its publication date is after the priority date of the patent in suit), it nevertheless provides supplementary technical information which may be relied upon, which was not contested by the opponents (whereby appellants 2 and 3 even also relied on S4 at the oral proceedings before the Board).

1.8.2 In addition, considering that S4 is related to ethylene copolymers prepared using the same kind of catalysts as the ones used both in the patent in suit and in T1, the Board is satisfied that the information contained in S4 may be taken into account when comparing the processes used in example 3 of the patent in suit with the one carried out in run 20 of T1. In particular, it is stated in paragraph 6 of S4 that it is generally known in the art that a polyolefin's composition distribution is largely dictated by the type of catalyst used and typically invariable for a given catalyst system. Furthermore, the examples of S4 were carried out using hexene as comonomer, as in the patent in suit and in run 20 of T1. Also, the Board concurs with appellant 2 (statement of grounds of appeal: page 11, second paragraph) that according to common general knowledge, the nature of the leaving group of the catalyst (chloride according to paragraphs 85 and 86 of S4 and to paragraph 101 of the patent in suit; fluoride in run

20 of T1) is not expected to have an impact on the composition distribution. No reasons were given or are known to the Board why that should not be the case.

1.8.3 Furthermore, it is explicitly indicated in S4 (paragraphs 3 and 28), that the expression "composition distribution" used therein is equivalent to "short chain branches distribution", which means that the indications in S4 that the composition distribution "broadens" means that feature SCBDB (short chain branching distribution breadth) as mentioned in claim 1 increases. It was established at the oral proceedings before the Board that information regarding the broadness of the composition distribution is given in paragraphs 9, 89, 90 and 94 of S4.

1.8.4 In view of the above, it has to be assessed if the information provided in S4 allows to conclude that the differences in process conditions between run 20 of T1 and example 3 of the patent in suit relied upon by appellant 1 may lead to a broadening of the composition distribution, i.e. to an increase in SCBDB such that the requirements in terms of SCBDB defined in claim 1 of the main request are not satisfied in run 20 of T1 whereas they are met in example 3 of the patent in suit.

In that respect, the impact of the reactor temperature, which is mentioned in S4 as possibly having an impact on the breadth of the distribution curve (paragraph 98 and figure 4, referring to a transformation from unimodal to bimodal distribution i.e. a possible broadening of the composition distribution when increasing the temperature), may be disregarded since the reaction temperature in example 3 of the patent in suit and in run 20 of T1 is the same (85 °C). Also, S4

was not shown to provide any information on the impact of the use of a continuity agent or of the ethylene partial pressure on the breadth of the composition curve (although a comparison related to ethylene partial pressure is made in examples 12-13 and Figure 3, no information on the *breadth* of the curves - but only on the height of the peaks - was shown to be given in S4, in particular in paragraph 97). Finally, appellant 2 established at the oral proceedings before the Board that all the indications provided in S4 supported the conclusion that the differences in process conditions between example 3 of the patent in suit and run 20 of T1 would, according to the teaching of S4, at most lead to a narrowing of the composition distribution curve, i.e. a decrease in terms of SCBDB. Apart from stating that in the absence of a rework in which said feature is determined, it could not be ascertained that said feature was necessarily satisfied (an issue which is addressed in section 1.13 below), no arguments were provided by appellant 1 to refute or at least to cast doubts on these considerations. Under these circumstances, although it is correct that it is derivable from S4 that process conditions may lead to a broadening of the composition distribution, there is no reason to expect from the disclosure of S4 that the differences in process conditions between run 20 of T1 and example 3 of the patent in suit lead to a broadening of the composition distribution, let alone to a broadening in such an extent that run 20 does not satisfy the requirements in terms of SCBDB defined in claim 1 of the main request whereas example 3 does.

1.8.5 At the oral proceedings before the Board, appellant 1 further argued that the requirements in terms of SCBDB specified in claim 1 of the main request were not only related to a specific value of said SCBDB but to a

relationship between SCBDB and I_2 in the form of an inequality, which was a more stringent requirement. In particular, there was no indication that said inequality would be satisfied by run 20 of T1, so appellant 1.

In that respect the Board agrees with appellant 1 that the requirements in terms of SCBDB is more stringent than a mere specific value of SCBDB, all the more because the I_2 feature reported for run 20 in Table 6 of T1 (66.5 g/10 minutes) is lower than the one given for example 3 in Table II of the patent in suit 74.6 g/10 minutes), which in view of inequality (ii) of claim 1 of the main request (SCBDB $\leq$ 0.0312(I_2) + 2.87) means that the requirement on SCBDB is more severe for run 20 of T1 (inequality (ii) imposes that SCBDB $\leq$ 4.93) than for example 3 of the patent in suit (inequality (ii) imposes that SCBDB $\leq$ 5.19). However, the SCBDB value reported for example 3 of the patent in suit is 4.86 (Table III, last row), which already satisfies the SCBDB feature required for run 20 of T1. Since it was not shown that the differences in process conditions between run 20 of T1 and example 3 of the patent in suit could lead to an increase in terms of SCBDB (i.e. a broadening of the composition distribution), it can only be concluded that inequality (ii) must be satisfied for run 20 of T1.

Regarding the molecular weight distribution features

1.9 Regarding the molecular weight distribution features specified in claim 1 of the main request, appellant 1 argued that according to column 11, lines 1-4 of T1, the molecular weight distribution (i.e. M_w/M_n) could be from 2 to 15, while the most preferred range was from 2.5 to 5. Considering that said most preferred range

was only partly overlapping with the range of M_w/M_n indicated in claim 1 of the main request, it could not be concluded that run 20 of T1 mandatorily satisfied said requirement. Similar considerations were also valid for the other molecular weight distribution feature of claim 1 of the main request (M_z/M_w), so appellant 1.

1.9.1 However, also in that respect, appellant 1 has not provided any evidence or argument to show that the differences in process conditions between run 20 of T1 and example 3 of the patent in suit would lead to a change in terms of molecular weight distribution such that the requirements defined in claim 1 of the main request (both for M_w/M_n and for M_z/M_w) are not satisfied in run 20 of T1 while they are met in example 3 of the patent in suit. The Board notes in particular that the catalyst used in run 20 of T1 and in example 3 of the patent in suit have the same catalytic site and only differ in the nature of the leaving group. Although it is known in the art that the nature of the catalyst may have a significant impact on the molecular weight distribution, the Board agrees with appellant 2 that, in the absence of any evidence, there is no reason to assume that the different leaving groups (chloride in example 3 of the patent in suit; fluoride in run 20 of T1) may lead to any differences. Also in this case it can only be concluded that in view of the evidence available also the conditions on the molecular weight distribution must be met.

Regarding the vinyl unsaturation feature

1.10 Regarding the requirement related to the amount of vinyl unsaturations specified in claim 1 of the main request, which is also not disclosed for run 20 of T1

but for which the parties had presented no arguments in writing, the parties present at the oral proceedings, in answer to a question by the Chairman of the Board, adopted the same line of argumentation as for the other features not specifically disclosed in T1: while appellant 1 held that in view of the different process conditions used, said feature could be not satisfied, appellants 2 and 3 argued that since said feature was known to be related to the nature of the catalyst, the differences in process conditions between run 20 of T1 and example 3 of the patent in suit could not lead to a change such that the requirement is not met for run 20 of T1 whereby example 3 of the patent in suit showed that no vinyl unsaturation at all was determined (last row of Table II of the patent in suit).

In that respect, the Board agrees with appellants 2 and 3 that vinyl unsaturations are known in the art to be primarily related to the nature of the catalyst used, for which, as explained above, it cannot be assumed that the difference in leaving group plays a role. Further considering that it was neither shown, nor made credible that the differences in process conditions between run 20 of T1 and example 3 of the patent in suit would lead to an increase in terms of vinyl unsaturation such that the requirement in terms of vinyl unsaturation is not satisfied in run 20 of T1 whereas it is met in example 3 of the patent in suit, there is also no reason to assume that said feature is not satisfied in run 20 of T1.

1.11 In view of the above, the Board concludes on the basis of the evidence on file and of the arguments of the parties that there is no reason to assume that the differences in process conditions between run 20 of T1 and example 3 of the patent in suit are such that they

would lead to such changes in the features mentioned in claim 1 of the main request which are not explicitly disclosed in T1 that these features are not satisfied for run 20 of T1 whereas they are met for example 3 of the patent in suit.

1.12 It is correct that, as put forward by appellant 1 and according to established case law, there should be no room for speculation when assessing novelty. In particular, the assessment of novelty should not be based on likeliness, but on identity of technical information between the content of the prior art disclosure and the subject-matter claimed. However, in the present case, the Board was not convinced by any of the arguments put forward by appellant 1 to cast doubts on the conclusion reached from the technical analysis of all the facts on file and according to which run 20 of T1 must satisfy the features of claim 1 which are not explicitly disclosed in T1. In arriving at its conclusion, the Board does not consider that it is likely that said features may be satisfied in run 20 of T1, but rather arrives at the conclusion that all the facts on file show that those features have to be met and that no evidence or convincing argument was provided to refute that conclusion.

1.13 For these reasons, the subject-matter of claim 1 of the main request is not novel over run 20 of T1.

Auxiliary requests 1 to 6

2. All parties present at the oral proceedings before the Board agreed that claim 1 of auxiliary request 1 was identical to claim 1 of the main request and that the amendments made in claim 1 of each of operative auxiliary requests 2 and 3 did not add any

distinguishing features over run 20 of T1. Also, no different position was taken in writing with regard to operative auxiliary requests 1 to 3 by the respondent (opponent 1). Therefore, the same conclusion regarding novelty over run 20 of T1 as outlined above for the main request is bound to be reached for each of auxiliary requests 1 to 3. In view of this, there was no need for the Board to address the issue of the admittance into the proceedings of these auxiliary requests (which were filed by appellant 1 after the summons to oral proceedings and the Board's communication had been sent).

3. At the oral proceedings before the Board, after having heard the Board's conclusion regarding novelty of the main request over run 20 of T1, no further arguments were put forward by appellant 1 in defense of any of operative auxiliary requests 4 to 6 with respect to lack of novelty over run 20 of T1. Under these circumstances, each of auxiliary requests 4 to 6 can only share the same fate as the main request i.e. the subject-matter of claim 1 of these auxiliary requests is not novel over run 20 of T1.

Auxiliary requests 7 to 14

4. Admittance of auxiliary requests 7 to 14

4.1 At the oral proceedings before the Board, appellant 2 objected to the admittance into the proceedings of each of auxiliary requests 7 to 14. It was argued that these auxiliary requests were not discussed in front of the opposition division, that they were directed to divergent sets of claims and raised new issues in respect of Article 123(2) EPC.

4.2 Considering that the statements of grounds of appeal of all parties was filed prior to 1 January 2020 and the summons to the oral proceedings was also sent to the parties prior to that date, the admittance of auxiliary requests 7 to 14 is subject to the stipulations of the Rules of Proceedings of the Boards of Appeal 2007 (in particular Articles 12(4) and 13 RPBA 2007 according to Article 25(2) and (3) RPBA 2020). Further considering that auxiliary requests 7 to 14 are identical to auxiliary requests 4 to 11 as filed with the rejoinder of appellant 1 to the statements of grounds of appeal of appellants 2 and 3 (i.e. the letter of appellant 1 dated 4 September 2017), they were filed in accordance with the requirements of Article 12(3) RPBA 2020 - which substantially reflect the ones of Article 12(2) RPBA 2007 - and their admittance into the proceedings undergoes the stipulations of Article 12(4) RPBA 2007, according to which the Board is empowered to hold inadmissible requests that could have been filed during the first instance proceedings.

4.3 In that respect, the question has to be answered whether there are objective reasons why appellant 1 could have been expected to present these requests in the first instance proceedings (see Case Law of the Boards of Appeal of the EPO, 9th edition, 2019, V.A. 4.4.2.a and V.A.4.11.1), i.e. if these requests should have been filed in the first instance proceedings.

4.4 Regarding auxiliary requests 7 to 9, they correspond to auxiliary requests 4 to 6 (i.e. auxiliary request 3 filed with letter of 8 October 2014 and auxiliary requests 4 and 5 filed with letter of 19 October 2016) defended by appellant 1 at the oral proceedings before the opposition division, i.e. these requests were

already submitted during the opposition division but they did not need to be discussed because a higher ranked request was allowed.

4.5 Regarding auxiliary requests 10 to 14, it was undisputed that they were first filed in appeal and it makes no doubt that they could have been filed earlier. However, they were filed at the beginning of the appeal proceedings, pursuant to Article 12(3) RPBA 2020 (which reflects the requirements of Article 12(2) RPBA 2007). In addition, in view of the high number of objections put forward by the opponents in opposition proceedings and pursued in appeal (see e.g. the issues addressed in details in the Board's communication), it is not surprising that appellant 1 considered defending the patent in suit in appeal in different manners in order to reply to all these objections. Finally, the claims of auxiliary requests 10 to 14 correspond to claims of higher ranked requests which were further amended by addition of the feature (less than 2 peaks...) which was held by the opposition division to confer an inventive step to the then pending auxiliary request 1 (whereas the then valid main request was held to be not inventive). Therefore, the filing of auxiliary requests 10 to 14 is held to be an appropriate measure taken by appellant 1 in view of the circumstances of the present case.

4.6 Under these circumstances, the Board decided that it would not be justified to hold any of auxiliary requests 7 to 14 inadmissible pursuant to Article 12(4) RPBA 2007. Therefore, these auxiliary requests are in the proceedings.

5. Auxiliary request 7 - Novelty of claim 1 over run 20 of T1

5.1 Claim 1 of auxiliary request 7 corresponds to claim 1 of the main request in which it was further stipulated that the claimed polyethylene composition should be "substantially free of long chain branching".

5.2 The sole additional argument (as compared to claim 1 of the main request) put forward by appellant 1 in support of novelty of said claim 1 over run 20 of T1 was that, according to paragraph 56 of the patent in suit, the added feature meant that the composition being claimed should not contain more than 0.01 long chain branching for 1000 carbon atoms and that no information in respect of long chain branching was indicated in T1.

5.3 In that respect, questioned by the Board at the oral proceedings, appellant 1 confirmed that although no information regarding the amount of long chain branching was indicated in the patent in suit regarding any of the examples illustrative of the operative claims, example 3 of the patent in suit effectively led to polyethylene compositions "substantially free of long chain branching" in the sense of paragraph 56 of the patent in suit, i.e. example 3 of the patent in suit was according to claim 1 of auxiliary request 7. That view was not contested by appellants 2 and 3 and the Board has no reason to be of a different opinion.

5.4 However, the Board agrees with appellants 2 and 3 that according to common general knowledge, the amount of long chain branching is primarily dictated by the nature of the catalyst used, i.e. a feature which was already taken into account when assessing novelty of claim 1 of the main request over run 20 of T1.

Therefore, for the same reasons as outlined above for the main request, there is also no reason to assume that the differences in process conditions between run 20 of T1 and example 3 of the patent in suit are such that they would lead to such changes in the amount of long chain branching in respect of run 20 that said feature is not satisfied for run 20 of T1 whereas it is met for example 3 of the patent in suit.

5.5 In view of the above, the subject-matter of claim 1 of auxiliary request 7 is not novel for the same reasons as outlined above for the main request.

6. Auxiliary request 8 - Novelty of claim 1 over run 20 of T1

6.1 Claim 1 of auxiliary request 8 is directed to an injection molded article comprising a polyethylene composition defined in the same terms as in claim 1 of the main request.

6.2 T1 discloses that the compositions taught therein are suitable especially or particularly for use in injection molding or rotomolding applications (column 1, lines 46-50; column 11, lines 59-67). However, although the composition prepared in run 20 of T1 was found to be according to operative claim 1 of the main request, the disclosure of said run 20 is only directed to the preparation of a polyethylene composition, whereby no indication is provided if and how said composition is used. Further considering that two different possible uses for that composition are explicitly indicated in T1 and others are not excluded, novelty of the subject-matter of claim 1 of auxiliary request 8 must be acknowledged.

7. Auxiliary request 8 - Inventive step of claim 1

7.1 Closest prior art

7.1.1 The parties disagreed regarding the selection of the closest prior art document, in particular regarding whether or not T1 could constitute a suitable starting point for the assessment of the inventive step as an alternative to document T2 which was selected by the opposition division. In that respect, the opposition division held that the closest prior art should be selected from T1 or T2 (or B2, which is not relevant to the present decision) because both documents dealt with injection molding but that T2 should be chosen rather than T1 because the problems addressed therein were closer to the aims addressed in the patent in suit, which were to provide polyethylene compositions suitable for injection molding and having improved impact resistance while maintaining stiffness and processability (decision under appeal: section 3.1.5.1, passages at the bottom of page 16 and top of page 17).

7.1.2 According to the case law, the closest prior art for assessing inventive step is a prior art disclosing subject matter conceived for the same purpose or aiming at the same objective as the claimed invention and having the most relevant technical features in common, i.e. requiring the minimum of structural modifications (Case Law, *supra*, I.D.3.1).

7.1.3 The Board agrees with the opposition division's findings, which were not disputed in appeal, regarding

- the aims of the patent in suit (paragraphs 6 and 98 of the patent in suit);

- the fact that both T1 and T2 deal with polyethylene compositions that may be used for making injection molded articles;

- the fact that T1 does not explicitly deal with the provision of polyethylene compositions having improved impact resistance while maintaining stiffness and processability, i.e. the aims of the patent in suit, whereas T2 does (paragraph 9; tables in paragraphs 71 and 72).

7.1.4 However, T1 aims among others at providing the same kind of injection molded articles (column 11, lines 65-67) as the patent in suit (paragraph 92). In addition, it is agreed with appellant 3 (statement of grounds of appeal: page 11, fourth full paragraph) that by providing polyethylene having a wide density range and a wide melt index range (T1: claim 1; column 1, lines 46-55; column 17, lines 2-28), T1 addresses technical problems which are at least related to the ones of the patent in suit since it is known in the art that when density increases, stiffness increases and impact properties decreases, which was not contested by appellant 1 (in particular at the oral proceedings before the Board; see also references to the general statement in that respect made in paragraph 50 of T2 in the last paragraph on page 8 of the letter of appellant 1 dated 15 May 2018). Therefore, the Board is satisfied that T1 is directed to a similar use to the one in the patent in suit and addresses problems which are at least related to the ones addressed in the patent in suit.

In addition, it is also accepted case law that the closest prior art document does not mandatorily have to disclose all the problems (allegedly) solved by the

claimed invention, in particular because, at the stage of determination of the suitable closest prior art document(s), the objective problem - i.e. the problem effectively solved over the closest prior art - has still to be determined (Case Law, *supra*, I.D.3.3: paragraph starting with "In T 698/10 ..."). In other words, it is not a requirement that the closest prior art document(s) address(es) exactly the same technical problem as the claimed invention (Case Law, *supra*, I.D.3.3: last sentence of the paragraph starting with "In T 644/97 ...").

In view of this, there is no reason to disregard T1 as a suitable starting point for the assessment of the inventive step. In particular, in the case in hand, it cannot be concluded that T1 is a prior art disclosure which is irrelevant to the claimed subject-matter in the sense that it does not mention a problem that is at least related to the ones derivable from the patent specification. Also, it cannot be concluded that T1 does not represent a promising starting point for the skilled person aiming at solving the technical problems set out in the patent specification. Therefore, the argument of appellant 1 that T1 was an "accidental anticipation", which according to accepted case law means that T1 would be so unrelated to and remote from the claimed invention that it would never have been taken into consideration when making the invention (headnote 2.1 of G 1/03, OJ EPO 2004, 413; Case Law, *supra*, I.C.4.10), is rejected.

7.1.5 The fact that T2 may constitute a further suitable document to be taken as the closest prior art, as agreed by all parties, is not in contradiction with the above finding. Indeed, it is also established case law that should the skilled person have a choice of several

workable routes, i.e. routes starting from different documents, which might lead to the invention, the rationale of the problem and solution approach requires that the invention be assessed relative to all these possible routes before an inventive step can be acknowledged (Case Law, *supra*, I.D.3.1, paragraph starting with "In T 1742/12 ..."). In that respect, the Board shares the view of appellants 2 and 3 that, in the application of the problem-solution approach, the determination of the closest prior art document does not mean that a single document has to be selected, the consequence being that no other document may further be considered. Therefore, the question of whether T2 is "closer" than T1 to the subject-matter being claimed or whether the problems addressed in T1 are "more remote" to the ones aimed at in the patent in suit than those of T2 cannot justify that T1 should not be considered as a suitable closest prior art document.

7.1.6 For these reasons, the argument of appellant 1 according to which T1 was not a suitable document to be taken as the closest prior art is rejected.

7.2 Starting from T1 as closest prior art document, appellant 1 further argued that the skilled person would have no reason to consider run 20 thereof as starting point and that doing so would be based on hindsight, knowing the patent in suit and in particular example 3 thereof.

However, the skilled person starting from T1 would consider any of its examples, including run 20, as a suitable starting point for the assessment of inventive step. In addition, run 20 of T1 appears particularly relevant since the polyethylene composition so prepared exhibits particularly good melt index I_2, which is

related to an aim of the patent in suit and would be further expected to allow its use in various usual manufacturing processes.

7.3 In view of the conclusion reached in respect of novelty in section 6 above, the subject-matter of claim 1 of auxiliary request 8 differs from said run 20 only in that it is directed to an injection molded article, which is not specifically disclosed in T1.

7.4 It is agreed with appellants 2 and 3 that there is no evidence on file supporting the obtention of a technical effect in relation to that distinguishing feature. In particular, in the absence of any fair comparison between a composition as defined in claim 1 of auxiliary request 8 and one prepared according to run 20 of T1 and/or of injection molded articles made therefrom, the improvements relied upon by appellant 1 are not supported by any evidence and cannot be retained in the formulation of the objective problem solved over the closest prior art. Under these circumstances, the technical problem effectively solved over T1 can only reside in the mere provision of a suitable use for the composition prepared in run 20.

7.5 Considering that T1 itself teaches that the compositions prepared therein are particularly well suited for making injection molded articles (column 11, lines 59-67), the subject-matter of claim 1 of auxiliary request 8 is obvious.

7.6 For these reasons the subject-matter of operative claim 1 of auxiliary request 8 is not inventive in the light of the teaching of T1 alone.

8. Auxiliary requests 9 to 14

At the oral proceedings before the Board, no further arguments were put forward by the parties in respect of either inventive step of claim 1 of auxiliary requests 9, 13 and 14 or novelty of claim 1 of auxiliary requests 10 to 12. In particular, it was not shown that the amendments made in claim 1 of these auxiliary requests constituted additional distinguishing feature(s) as compared to any of the higher ranked requests. Therefore, these auxiliary requests can only share the same fate as the higher ranked requests, namely the subject-matter of claim 1 of auxiliary requests 9, 13 and 14 is not inventive over T1 and the subject-matter of claim 1 of auxiliary requests 10 to 12 is not novel over run 20 of T1.

9. Since none of the requests of appellant 1 is allowable, there is no need to deal with any other issue and the patent is to be revoked.

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:

B. ter Heijden D. Semino

Decision electronically authenticated