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**Datasheet for the decision  
of 27 April 2022**

**Case Number:** T 3024/19 - 3.3.03

**Application Number:** 15001245.8

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**Language of the proceedings:** EN

**Title of invention:**  
POLYETHYLENE COMPOSITION SUITABLE FOR PIPE APPLICATIONS

**Patent Proprietor:**  
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Borealis AG

**Opponent:**  
TotalEnergies One Tech Belgium

**Relevant legal provisions:**  
RPBA 2020 Art. 12(4)  
EPC Art. 100(b), 56

**Keyword:**

Amendment to case - exercise of discretion

Grounds for opposition - insufficiency of disclosure (no)

Inventive step - (yes)



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Case Number: T 3024/19 - 3.3.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.03**  
**of 27 April 2022**

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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
16 October 2019 concerning maintenance of the  
European Patent No. 3088458 in amended form.**

**Composition of the Board:**

**Chairman**            D. Semino  
**Members:**            D. Marquis  
                              A. Bacchin

## Summary of Facts and Submissions

I. The appeal lies against the decision of the opposition division according to which European patent No. 3 088 458 as amended according to the first auxiliary request filed with letter of 18 July 2019 met the requirements of the EPC.

II. Claim 1 of the first auxiliary request read as follows:

"1. Polyethylene composition comprising

- a base resin comprising
  - (A) a first ethylene homo- or copolymer component having a melt flow rate  $MFR_2$  (2.16 kg, 190°C) of equal to or more than 130 g/10 min to equal to or less than 300 g/10 min, determined according to ISO 1133, and
  - (B) a second ethylene homo- or copolymer component,
- optional carbon black,
- optional further polymer component(s) different to the first ethylene homo- or copolymer components (A) and (B), and
- optional additive(s);

wherein the first ethylene homo- or copolymer component (A) has a lower weight average molecular weight as the second ethylene homo- or copolymer component (B);

the polyethylene composition has a melt flow rate  $MFR_5$  (5 kg, 190°C) of more than 0.60 g/10 min to less than 1.00 g/10 min, determined according to ISO 1133, and a shear thinning index  $SHI_{2.7/210}$  of equal to or more than 10 to equal to or less than 27, and a viscosity at a constant shear stress of 747 Pa,  $\eta_{747}$ , of equal to or more than 50 kPas to

equal to or less than 150 kPas".

III. The decision of the opposition division was based among other documents on D1 (EP 1 909 014 A1), D10 (EP 2 894 174 A1) and D11 (High performance PE100 Resin with extraordinary resistance to slow crack growth, T. Yoshikiyo et al., Japan Polyethylene Corp, 13 November 2006).

IV. As far as it is relevant to the present appeal, the decision of the opposition division can be summarized as follows:

- The subject-matter of claim 7 dependent on claim 2, which imposed limitations on the densities of both the composition and the base resin, was sufficiently disclosed.
- The subject-matter of claim 13 was also sufficiently disclosed with respect to the determination of the rapid crack propagation resistance. The objection against said claim related to a lack of clarity and not to sufficiency of disclosure.
- Claim 1 of the main request lacked novelty over examples IE1, IE4, CE1 and CE3 of D10.
- D11 was admitted into the proceedings.
- There were no objections under Rule 80 EPC, Article 123(2) EPC or Article 84 EPC against the amendments performed in the first auxiliary request. Also, the reasoning concerning sufficiency of disclosure for the main request applied to the first auxiliary

request.

- Claim 1 of the first auxiliary request was novel over D1. The examples of D1 disclosed compositions of ethylene copolymers but their melt flow rates and viscosities were not according to operative claim 1.
  
- D1 was the closest prior art. Operative claim 1 differed from example 1 of D1 in the MFR<sub>2</sub> of the first polyethylene, in the MFR<sub>5</sub> and in the viscosity  $\eta_{747}$  of the composition. The problem was the provision of a polyethylene composition with improved processability and rapid crack propagation resistance, while the pressure resistance and the slow crack propagation resistance were not impaired. There was no teaching in D1 that would have led the skilled person to the solution provided in operative claim 1 and no other document was cited in combination with D1. Claim 1 of the first auxiliary request involved therefore an inventive step.

V. The opponent (appellant) lodged an appeal against that decision. With the statement of grounds the appellant filed a number of documents which have been numbered by the patent proprietor as follows:

D12: WO 00/22040

D13: EP 3 109 275 A1

D14: US 2018/0030252

D15: ISO 13477:2008 (S4 Test)

D16a: ISO 1133-1

D16b: ISO 1133-2

D17: ISO 6721-10 (complex shear viscosity)

D18: Publication "round robin for parallel plate

oscillatory rheometry using polyethylene and polypropylene melts", <http://eprintpublications.npl.co.uk/406/1/CMMT11.pdf>  
D19: ISO 12162:2009 (MRS rating)  
D20: ISO 9080:2012  
D21: Annex A  
D22: Annex B

VI. Oral proceedings before the board were held on 27 April 2022 in the presence of the patent proprietor (respondent) and in the absence of the appellant as announced in their letter dated 25 April 2022.

The appellant requested in writing that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed.

In view of the request of the respondent the main (and only) claim request in appeal is the first auxiliary request on which the decision was based.

VII. The arguments of the appellant may be summarized as follows:

Admittance of new objections and documents in appeal

- The proprietor (now respondent) had not filed any substantive comments nor any auxiliary request during opposition proceedings until the day before the date set under Rule 116(1) EPC when they filed 31 pages of comments and 12 auxiliary requests, thus voluntarily making it more difficult for the opponent (now appellant) to prepare for the oral proceedings. In any case, it had been impossible



for the opponent to react by the date set under Rule 116(1) EPC.

Rule 80 EPC and Article 84 EPC

- The modification performed in dependent claim 8 of the main request was neither necessary nor appropriate and contravened the requirements set out in Rule 80 EPC and Article 84 EPC (section 4 of the statement of grounds).

Sufficiency of disclosure

- Claim 6 of the main request when dependent on claim 2 was not sufficiently disclosed as the patent did not provide information as to how the skilled person could obtain a composition having a density between 947 and 960 kg/m<sup>3</sup> that contained a base resin with a density of from 938 to 948 kg/m<sup>3</sup>, in particular outside the overlapping range of 947 to 948 kg/m<sup>3</sup>
- Claim 12 also lacked sufficient disclosure as the ISO standard mentioned in Claim 12 did not define the pipe diameter, a parameter that had to be specified in order to measure the S4 rapid crack propagation resistance of the claimed pipes.
- Claim 1 lacked sufficiency of disclosure because the viscosity at shear stress of 747 Pa was ill defined and there was no guidance as to how to obtain polyethylene compositions having a viscosity in the range defined in operative claim 1 (sections 5.3 to 5.5 of the statement of grounds).

- The pipe of claim 11 lacked sufficiency of disclosure because the patent in suit did not contain guidance as to the preparation of polyethylene compositions meeting the combination of a shear thinning index  $SHI_{2.7/210}$  within the range of 10-27 and a viscosity at a constant shear stress of 747 Pa,  $\eta_{747}$ , in the range of 50 kPas to 150 kPas. That objection applied also to the pipes of claims 12 and 13 of the main request (section 5.6 of the statement of grounds).
  
- Claim 13 depending successively from claims 11, 10 and 1 lacked sufficiency of disclosure because the patent in suit did not provide enough information to enable the skilled person in a directed, structured manner to arrive at pipes within the scope of claim 13. In particular, the patent did not disclose any relationship between the structural or compositional features of the polyethylene composition and the functional features of the pipes. The same objection applied to claim 12 (section 5.7 of the statement of grounds).

#### Novelty

- Claim 1 of the main request lacked novelty over D10 since the patent proprietor had not shown that the viscosity  $\eta_{747}$  at constant shear stress of 747 Pa of the compositions exemplified in D10 was not according to claim 1. If novelty was given, then the patent lacked a sufficient disclosure as the composition and process of D10 were essentially the same as the ones in the patent (sections 5.5, 6.1 and 6.2 of the statement of grounds).

Inventive step

- Starting from D1 as the closest prior art the subject-matter of claims 1, 10, 11, 13 and 14 of the main request was obvious to the skilled person.

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

Admittance of new objections and documents

- The objections presented in sections 4, 5.3 to 5.7, 6.1 and 6.2 of the statement of grounds of appeal were newly raised in appeal and should not be admitted into the proceedings. Also documents D12-D14, D21 and D22 should not be admitted as late filed and either related to new objections or not discussed in the earlier proceedings.

Sufficiency of disclosure

- There was no discrepancy between the density of the base resin recited in claim 2 as granted and the density of the composition recited in claim 7 as granted. It was common in the field of polymers to disclose the density of the base resin and the density of the composition including further components which had an influence to the density. The specification and the examples provided ample information to the skilled person on how to obtain a composition with all the limitations given in the claims. Claim 6 of the main request which was based on claim 7 as granted was therefore sufficiently disclosed.

- The absence of the wall thickness of the test pipe for the determination of the S4 rapid crack propagation resistance was an issue relating to clarity and not to sufficiency of disclosure. Claim 12 was therefore sufficiently disclosed.

Inventive step

- Inventive step was to be analysed starting from document D1, in which case an inventive step had to be acknowledged for the claims of the main request.

## **Reasons for the Decision**

1. Admittance of new objections in appeal
  - 1.1 The statement setting out the grounds of appeal contained among others the following objections relating to the main request in appeal:
    - (a) An objection based on Rule 80 EPC and Article 84 EPC against the modification performed in dependent claim 8 of the main request (section 4 of the statement setting out the grounds of appeal),
    - (b) An objection of lack of sufficiency of disclosure against claim 1 of the main request based on the definition of the range of viscosity at a constant shear stress of 747 Pa and the preparation of a composition having that property (sections 5.3 to 5.5 of the statement setting out the grounds of appeal),
    - (c) An objection of lack of sufficiency of disclosure against claims 11 to 13 of the main request with

regard to the preparation of articles/pipes/pipes fittings for which the polyethylene composition meets the combination of shear thinning index and viscosity at a constant shear stress of 747 Pa and, for claims 12 and 13, also requirements on the critical pressure in a S4 rapid crack propagation resistance, the pressure resistance determined according to ISO 1167-1:2006 and the slow crack propagation resistance (section 5.6 of the statement setting out the grounds of appeal),

(d) An objection of lack of sufficiency of disclosure against claims 12 and 13 of the main request with regard to the preparation of a pipe/pipe fitting for which the patent in suit would not provide guidance as to the structural or compositional features of the polyethylene composition and the functional features of the article in order to meet the requirements set out in these claims (section 5.7 of the statement setting out the grounds of appeal),

(e) An objection of lack of novelty against claim 1 of the main request in view of document D10 or an objection of lack of sufficiency of disclosure if novelty is acknowledged (sections 5.5, 6.1 and 6.2 of the statement setting out the grounds of appeal).

1.2 These objections were not raised before the opposition division and were not part of the decision under appeal.

1.3 As the statement setting out the grounds of appeal was filed on 26 February 2020, Article 12, paragraphs 4 to 6 RPBA 2020 applies (see Article 25(1) and (2) RPBA

2020). The objections raised in items 4, 5.3 to 5.7, 6.1 and 6.2 in the statement setting out the grounds of appeal are not directed to facts, objections, arguments and evidence on which the decision under appeal was based, as required by Article Article 12(2) RPBA 2020. Moreover, it has neither been submitted nor demonstrated that these objections were admissibly raised and maintained in the proceedings before the opposition division. The new objections in appeal thus constitute amendments of the appellant's case in the sense of Article 12(4), first paragraph, RPBA 2020, which may be admitted only at the discretion of the Board, whereby reasons should be provided for submitting the amendments in appeal (Article 12(4) 2020, second paragraph).

- 1.4 The appellant argued in the statement setting out the grounds of appeal (section 1) that it had been impossible for them to react appropriately to the filing of the first auxiliary request in opposition (now the main request) since that request had not been filed until the day before the date set under Rule 116(1) EPC. The Board observes that the request was filed on 18 July 2019 and thus two months in advance of the oral proceedings, which took place before the opposition division on 19 September 2019. Further, as indicated below, the amendments were either taken from granted claims, rather than from the description (see point 1.4.1), or the possibility of raising the objections newly raised in appeal was apparently specifically addressed already during the oral proceedings before the opposition division (see point 1.4.2). Thus, the Board finds that the appellant had reasons to raise those objections already during opposition proceedings.

1.4.1 It is apparent that the objections of lack of sufficiency of disclosure raised by the appellant (objections indicated in point 1.1. as (b)-(d)) concern features and combination of features that were already present in the granted claims. Claim 1 of the main request corresponds to claim 5 as granted, namely claim 1 as granted in which the polyethylene composition is additionally defined by its viscosity at a constant shear stress of 747 Pa. Also, the pipes/pipe fittings of granted claims 12-14 (corresponding to claims 11-13 of the present main request) refer to any of the preceding claims and therefore encompass the combination of shear thinning index, viscosity at a constant shear stress of 747 P and for claims 13 and 14 the critical pressure in a S4 rapid crack propagation resistance, the pressure resistance determined according to ISO 1167-1:2006 and the slow crack propagation resistance as well. Under these circumstances the new objections of lack of sufficiency of disclosure raised in appeal could have been raised before the opposition division in view of the corresponding granted claims. In view of that the date at which the first auxiliary request was filed in the first instance proceedings does not justify the filing of these objections for the first time in the appeal procedure.

1.4.2 As to the other objections raised in appeal (objections indicated in point 1.1. as (a) and (e)), it is apparent that at the oral proceedings before the opposition division the opponent did not object to the then first auxiliary request (present main request) under Rule 80 or Article 84 EPC (corresponding to objection (a) above, see minutes points 6.1 and 6.3 and decision points 4 and 6) and did not maintain their novelty objection against claim 1 of the first auxiliary

request over document D10 (corresponding to objection (e) above, see minutes point 6.5 and decision point 8), while having the possibility to do so.

- 1.4.3 The Board therefore does not see any reason why it was not possible for the appellant to raise the objections at the beginning of the opposition proceedings or at the latest at the oral proceedings before the opposition division.
- 1.5 In view of the above, the Board finds it appropriate to make use of its discretion pursuant to Article 12(4), first paragraph, second sentence, RPBA 2020 by not admitting into the proceedings the objections raised in sections 4, 5.3 to 5.7, 6.1 and 6.2 of the statement setting out the grounds of appeal.
2. Admittance of D12 to D14, D20 to D23
  - 2.1 Documents D12, D13, D14, D21 and D22 were firstly filed with the statement of ground of appeal and cited in support of the objection of lack of novelty of claim 1 of the main request in view of D10 (section 6.2 of the statement setting out the grounds of appeal), an objection first submitted in appeal which - for the reasons indicated above - is not admitted into the proceedings by the Board. In that respect, there is no further justification provided by the appellant for the admittance of D12, D13, D14, D21 and D22 into the proceedings.
  - 2.2 In view of that, the Board finds it appropriate to make use of its discretion pursuant to Article 12(4), first paragraph, second sentence, RPBA 2020 by not admitting into the proceedings documents D12, D13, D14, D21 and



D22.

3. Sufficiency of disclosure

3.1 The objection of lack of sufficiency of disclosure against claim 7 as granted (claim 6 of the present main request) was pursued in appeal. That objection is based on an alleged incompatibility between the range defining the density of the base resin in claim 2 and the range defining the density of the polyethylene composition in claim 6 of the main request.

3.2 The opposition division laid out in the contested decision that it was known by common knowledge that the density of the composition could by necessity be raised by the addition of carbon black. That point was not disputed in appeal. Rather, the argument of the appellant was that pipes produced from compositions including carbon black would necessarily be black and there would be no guidance in the patent in suit as to how to obtain pipes that are not black.

3.3 Operative claim 6 which depends on claims 2 and 1 however does not pertain to pipes but to a polyethylene composition. In that respect the question of sufficiency of disclosure was whether the polyethylene composition of claim 6 could be prepared by the skilled person, while the question of whether pipes that were not black could be obtained on the basis of polyethylene compositions is not relevant to operative claim 6. Furthermore, neither claim 6 nor any other claim of the main request is defined by the colour of the polyethylene composition or of the pipe made from that polyethylene composition and as such the colour was not relevant to the question of sufficiency of

disclosure of operative claim 6 dependent on claim 2.

- 3.4 As to the question of whether the invention disclosed in claim 6 dependent on claim 2 could be put into practice without carbon black, the opponent, who as a general rule bears the burden of proof with regard to sufficiency of disclosure, has not laid out evidence that despite making all reasonable efforts they were unable to put the invention into practice (Case Law of the Boards of Appeal, 9th Edition, July 2019, III.G. 5.1.2.c). The Board thus finds that operative claim 6 is sufficiently disclosed.
- 3.5 The objection of lack of sufficiency of disclosure against claim 12 was also pursued in appeal, the argument of the appellant being that in the absence of the conditions (the nominal pipe diameter and the wall thickness) to be applied for the measurement of the S4 rapid crack propagation resistance (according to D15, ISO 13477), the claim lacked sufficiency of disclosure.
- 3.6 It was however not in dispute that the conditions needed for the measurement of the S4 rapid crack propagation resistance were in fact laid out in paragraph 158 of the patent in suit. Since sufficiency of disclosure must be assessed on the basis of the application/patent in suit as a whole (Case Law of the Boards of Appeal, 9th Edition, July 2019, II.C.3.1), any relevant portion of the description can provide the necessary guidance to perform the invention.
- 3.7 In the present case, since paragraph 158 of the description provides the necessary conditions for the determination of the S4 rapid crack propagation resistance, the Board has no doubt that the patent in suit provides the necessary guidance in that respect.

As to whether that guidance should be part of the claims, the decision of the opposition division indicated that that question was a question of clarity and not of sufficiency of disclosure (item b, page 3 of the decision of the opposition division). That conclusion was not contested by the appellant, nor does the Board see a reason to depart from it.

3.8 The claims of the main request are therefore sufficiently disclosed.

4. Inventive step

4.1 The decision of the opposition division considered D1 and in particular the composition of its example 1 as the closest prior art (section bridging pages 8 and 9 of the contested decision). The choice of D1 as closest prior art was also not disputed by the parties in appeal.

4.2 Both the appellant and the respondent acknowledged (page 17 of the statement setting out the grounds of appeal and section 6.3 on page 22 of the rejoinder) that claim 1 of the main request differed from the examples 1-3 of D1 in the melt flow rate  $MFR_2$  of the first ethylene homo- or copolymer (130-300 g/10 min in operative claim 1 by contrast to D1: 52 g/10 min in example 1; 47 g/10 min in example 2; 442 g/10 min in example 3). Also, while the melt flow rate  $MFR_5$  of the polyethylene composition of example 3 of D1 (0.91 g/10 min) was according to operative claim 1 (0.6-1.0 g/10 min) the values of  $MFR_5$  for the compositions of example 1 (0.43 g/10 min) and example 2 (0.41 g/10 min) of D1 were outside operative claim 1.

- 4.3 Regarding the shear thinning index ( $SHI_{2.7/210}$ ) and the viscosity ( $\eta_{747}$ ), the appellant considered that the values reported for example 3 ( $SHI_{2.7/210}=33.1$ ) and examples 1 and 2 ( $\eta_{747}= 160.3$  kPas and  $172.7$  kPas) respectively (D1, Table 1) fell in the ranges defined for these parameters in operative claim 1 (shear thinning index  $SHI_{2.7/210}$  of equal to or more than 10 to equal to or less than 27 and viscosity at a constant shear stress of 747 Pa,  $\eta_{747}$ , of equal to or more than 50 kPas to equal to or less than 150 kPas) even though the values reported in example 3 and examples 1 and 2 are formally outside the ranges of operative claim 1.
- 4.4 The appellant in the passage bridging pages 17 and 18 of the statement setting out the grounds of appeal supported that argument by referring to document D18 without however providing any further explanation or evidence as to why the teaching of that document, which is said to concern the rheological properties of a HDPE melt based determined by the standard ISO 6721-10 (D17), could be applied to the compositions of examples 1 to 3 of D1. The Board does also not see how the brief reference to D18 in the statement setting out the grounds of appeal which concerns a measurement method that does not immediately correspond to the method used in D1 (method mentioned in paragraph 71 of D1) could show that the shear thinning index  $SHI_{2.7/210}$  of the composition of example 3 of D1 and the viscosities at a constant shear stress of 747 Pa of the compositions of examples 1 and 2 of D1 were according to operative claim 1.
- 4.5 The Board thus finds that operative claim 1 differs from examples 1 and 2 of D1 in the melt flow rate  $MFR_2$  of the first ethylene copolymer as well as in the melt

flow rate (MFR<sub>5</sub>) and the viscosity ( $\eta_{747}$ ) of the polyethylene composition. Operative claim 1 also differs from example 3 in the melt flow rate MFR<sub>2</sub> of the first ethylene copolymer and in the shear thinning index of the composition.

4.6 The compositions according to example 1 and comparative example 1 of the patent in suit differ from one another only in the value of the melt flow rate MFR<sub>2</sub> of the first ethylene polymer (325 g/10 min for comparative example 1 and 200 g/10 min in example 1). The appellant argued however that the value of the melt flow rate MFR<sub>2</sub> disclosed for the first ethylene polymer in comparative example 1 would not lie outside the range defined in operative claim 1 (130-300 g/10 min) and that that example was therefore not a comparative example that could establish the presence of an effect linked to the selection of a melt flow rate MFR<sub>2</sub> in the range of operative claim 1 (section "Technical effect" and reference 9 on page 18 of the statement of grounds of appeal). The appellant cited in that regard the ISO standard 1133 (D16a and D16b) whose section 11 discloses that values of melt flow rates MFR<sub>2</sub> measured according to the standard could be expected to vary by  $\pm 10\%$  when measured by different laboratories.

4.7 The argument of the appellant is not relevant for the following reasons. There is no indication in the patent in suit that the melt flow rates MFR<sub>2</sub> in example 1 and comparative example 1 were measured by different laboratories. In particular paragraph 163 of the patent in suit describing the polymerization of comparative example 1 by reference to example 1 implies that the melt flow rates in these examples were measured in the course of the polymerization process and in the absence of evidence to the contrary, it must be assumed that

they were measured in the same laboratory. There is therefore no basis to apply the deviation of  $\pm 10\%$  when measured by different laboratories to the examples of the patent in suit and consider that comparative example 1 would be according to operative claim 1.

4.8 The compositions of comparative example 1 and example 1 thus provide a fair comparison since the polyethylene compositions they disclose have been prepared under very similar conditions, the difference in the ratio of hydrogen to ethylene ( $H_2/C_2$ ) in the loop reactor being attributable to the different melt index values of the first ethylene polymers. A comparison of the properties of the compositions reported in Table 2 shows that the process according to example 1 leads to an improved rapid crack propagation resistance in the S4 Test.

4.9 The data reported in Table 2 of the patent in suit do not show any other improved properties that could be attributed to any of the other distinguishing features over D1 ( $MFR_5$ ,  $SHI_{2.7/210}$  and  $\eta_{747}$ ) and in particular they do not show that the polyethylene compositions meet PE80 requirements with an improved balance of properties as set out in paragraph 8 of the patent in suit. In view of that, documents D11 and the ISO standards 1262 (D19) and 9080 (D20) referred to by the appellant in section 7.4 of the statement setting out the grounds of appeal discussing these effects are thus not needed so there is no need to decide on the admittance of D11 into the proceedings (which was in dispute between the parties).

4.10 In view of the above, the problem solved is the provision of polyethylene compositions with improved S4 rapid crack propagation resistance.

- 4.11 The appellant submitted with regard to the melt flow rate  $MFR_2$  of the first ethylene homo- or copolymer that the information available in D1 showed that starting from Example 3, the melt flow rate  $MFR_2$  of the first ethylene homo- or copolymer could be reduced in the direction of the value for example 1 without any particular technical hurdles or obstacles, with satisfactory properties (last three paragraphs on page 19 of the statement setting out the grounds of appeal).
- 4.12 The polyethylene compositions of examples 1 and 2 of D1, however, have values of  $MFR_2$  of 47 g/10 min and 52 g/10 min respectively. These values are below the range defined in operative claim 1 (130-300 g/10 min) and there is no pointer in the examples of D1 towards the range of  $MFR_2$  as defined in operative claim 1 and no mention of the problem posed. Furthermore, the polyethylene compositions of examples 1 and 2 of D1 have melt flow rates  $MFR_5$  (Example 1: 0.43 g/10 min; example 2: 0.41 g/10 min) that are below the range of  $MFR_5$  defined in operative claim 1 ( $MFR_5$  of 0.6-1.0 g/10 min) and viscosities at constant shear stress of 747 Pa (Example 1: 160.3 kPas; example 2: 172.7 kPas) that are above the range defined in operative claim 1 ( $\eta_{747}$  of 50-150 kPas).
- 4.13 The appellant has not explained how reducing the melt flow rate  $MFR_2$  of the first ethylene homo- or copolymer of a polyethylene composition to a value that would be in the range defined in operative claim 1 would also result in that composition having a melt flow rate  $MFR_5$  and a viscosity at constant shear stress of 747 Pa according to operative claim 1, all the more when aiming at solving the problem posed. There is no teaching in D1 cited by the appellant that would lead the skilled person starting from any of the

polyethylene compositions of examples 1-3 to a polyethylene composition according to operative claim 1 when aiming at solving the posed problem.

4.14 The composition of claim 1 of the main request involves therefore an inventive step.

4.15 Claims 10 and 14 of the main request are respectively directed to an article comprising the polyethylene composition according to any of the composition claims, and to the use of a polyethylene composition according to any of the composition claims for the production of an article. Claims 10 and 14 are therefore inventive for the same reasons as outlined for claim 1 of the main request. That conclusion also applies to the dependent claims 11-13 of claim 10.

4.16 The claims of the main request satisfy the requirements of Article 56 EPC.

5. Conclusion

5.1 As none of the objections against the main request which is in the proceedings is successful, the appeal is to be dismissed.



**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



A. Pinna

D. Semino

Decision electronically authenticated