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**Datasheet for the decision  
of 6 September 2024**

**Case Number:** T 0442/22 - 3.3.03

**Application Number:** 14199663.7

**Publication Number:** 3037471

**IPC:** C08L23/04, C08L23/06

**Language of the proceedings:** EN

**Title of invention:**

Process for producing multimodal polyethylene compositions

**Patent Proprietor:**

Borealis AG

**Opponent:**

Basell Polyolefine GmbH

**Relevant legal provisions:**

EPC R. 99(2)

RPBA 2020 Art. 12(4), 12(6), 13(1), 13(2)

EPC Art. 56

**Keyword:**

Admissibility of appeal - appeal sufficiently substantiated  
(yes)

Amendment to case - documents and auxiliary requests 2-7,  
10-15 admitted (no)

Inventive step - main request, auxiliary requests 1, 8 and 9  
(no)

**Decisions cited:**

T 0641/89, T 0713/97



**Beschwerdekammern**

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Case Number: T 0442/22 - 3.3.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.03**  
**of 6 September 2024**

**Appellant:**  
(Patent Proprietor)

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**Representative:**

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**Respondent:**

(Opponent)

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**Representative:**

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**Decision under appeal:**

**Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
20 December 2021 concerning maintenance of the  
European Patent No. 3037471 in amended form.**

**Composition of the Board:**

**Chairman**

D. Semino

**Members:**

D. Marquis

L. Basterreix

## **Summary of Facts and Submissions**

- I. The appeal lies against the decision of the opposition division concerning maintenance of European patent No. 3 037 471 on the basis of the claims of auxiliary request 4 submitted as auxiliary request 3 with letter of 24 June 2020 and an adapted description.
- II. The decision under appeal was based on the claims as granted (main request) and the claims of auxiliary requests 1-4 corresponding to auxiliary requests 1, 2, 2a and 3 filed with letter of 24 June 2020.

Claim 1 as granted (main request) read as follows:

"1. A process for producing a multimodal polyethylene composition comprising the following steps: (i) introducing a first polyethylene resin (A) having a weight average molecular weight  $M_w$  of from 150 to 3000 kg/mol and  $MFR_5$  of not more than 60 g/10 min and comprising from 10 to 90 % of an ultra-high molecular weight polyethylene (A-1) having viscosity average molecular weight of at least 700 kg/mol into a feed port of an extruder; (ii) introducing a second polyethylene resin (B) having  $MFR_5$  of from 0.15 to 1.0 g/10 min and a density of equal to or more than 945 kg/m<sup>3</sup> to equal to or less than 970 kg/m<sup>3</sup> into a feed port of the extruder; (iii) melting and mixing the first polyethylene resin (A) and the second polyethylene resin (B) in the extruder to form a multimodal polyethylene composition; (iv) recovering the multimodal polyethylene composition from the extruder; and (v) cooling and solidifying the multimodal polyethylene composition, wherein the multimodal

polyethylene composition has a melt flow rate  $MFR_5$  (190°C, 5 kg) of at most 1.0 g/10 min and a density of equal to or more than 935 kg/m<sup>3</sup> to equal to or less than 965 kg/m<sup>3</sup>".

Claim 1 of auxiliary request 1 was identical to granted claim 1.

Claim 1 of auxiliary request 2 corresponded to granted claim 1 with the following addition at the end of the claim: "wherein multimodal polymer composition has a viscosity  $\eta_{747}$  of at least 700 kPa·s measured at a shear stress of 747 Pa".

Claim 1 of auxiliary request 3 was identical to claim 1 of auxiliary request 2.

Claim 1 of auxiliary request 4 corresponded to granted claim 1 with the following addition at the end of the claim: "wherein the viscosity  $\eta_{747}$  and the melt flow rate  $MFR_5$  measured according to ISO 1133 at 190°C under 5 kg load follow the relationship  $\eta_{747} > 1608 - 2530 \cdot MFR_5$ ".

III. The following documents were *inter alia* submitted during the opposition proceedings:

D1: WO 02/26880 A1  
D6: WO 2014/095911 A1  
D8: WO 2014/095917 A1  
D9: WO 2013/060736 A1  
D10: WO 2014/177547 A1  
D11: datasheet BorSafe HE3490-LS-H

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

- Claim 1 of the main request was novel over the disclosure of each of documents D1, D8, D6, D9 and D10.
- Claim 1 of the main request lacked an inventive step over document D1 taken as the closest prior art. The same conclusion applied to claim 1 according to auxiliary requests 1-3.
- Claim 1 of auxiliary request 4 involved an inventive step over D1 and D8, alternatively taken as the closest prior art.

V. The patent proprietor (appellant) lodged an appeal against the decision of the opposition division. They submitted auxiliary requests 1-17 and resubmitted document D11 with their statement of grounds of appeal. The appellant also submitted D12 (21st Century Drainage Solutions, PPI Drainage Handbook, © Plastics Pipe Institute 2019, Chapter 2, pages 11 and 12) with their letter of 25 June 2024 and D13 (EP 2 620 472 B1) with their letter of 23 August 2024.

VI. Oral proceedings before the Board were held on 6 September 2024.

VII. The final requests of the parties were as follows:

- (a) The appellant requested that the decision of the opposition division be set aside and that the opposition be rejected (main request) or that the patent be maintained on the basis of any of the auxiliary requests 1-16 filed with the statement of grounds of appeal.

(b) The opponent requested that the appeal be rejected as inadmissible or, in the alternative, that the appeal be dismissed.

Auxiliary requests 1, 8, 9 and 16 filed with the statement of grounds of appeal corresponded to auxiliary requests 1 to 4 on which the decision of the opposition division was based (see point II above for the wording of claim 1 of each of these requests).

Auxiliary requests 2-7 and 10-15 filed with the statement of grounds of appeal corresponded to auxiliary requests 16-23, 6, 7, 10, 11, 20 and 21 filed before the opposition division. The precise amendments in claim 1 of these requests is not relevant to the present decision.

VIII. The parties' submissions, in so far as they are pertinent, may be derived from the reasons for the decision below. The disputed points concerned the admissibility of the appeal, the admittance of documents D11, D12 and D13 and auxiliary requests 2-7 and 10-15 in the proceedings and inventive step of claim 1 of the main request and of auxiliary requests 1, 8 and 9 in view of document D1.

### **Reasons for the Decision**

1. Admissibility of the appeal

1.1 The respondent requested that the appeal be rejected as inadmissible on the grounds that it was not properly substantiated (rejoinder, page 2). The argumentation of the appellant was based on an alleged lack of substantiation regarding why the reasoning of the opposition division relying on document D1 as the

closest prior art had to be rejected, the statement of grounds of appeal only indicating that D8 and not D1 was the document representing the closest prior art.

1.2 The Board finds in the sections 3.18-3.21 of the statement of grounds a substantiated argument as to why the choice of D1 as closest prior art was contested in appeal (decision under appeal, page 17, last paragraph and page 18, first and fifth paragraphs), in particular in view of decisions T 641/89 and T 713/97 and the alleged superior relevance of D8 disclosing the presence of 10% (A-1) in component(A). Independently of whether the argument is convincing, this is a sufficient substantiation as to why the decision was held to be not correct from the appellant's point of view and should be overturned.

1.3 In view of this, the Board finds that the substantiation provided by the patent proprietor in their statement of grounds of appeal fulfils the requirements set out in Rule 99(2) EPC and that the appeal is admissible.

2. Admittance D11, D12 and D13

2.1 The appellant resubmitted document D11 with their statement of grounds of appeal (page 3, second paragraph). The admittance of D11 into the appeal proceedings was contested by the respondent (rejoinder, page 3, section II.3).

2.2 D11 is a document that was submitted by the patent proprietor at the oral proceedings before the opposition division. The opposition division decided not to admit D11 into the proceedings on the grounds that it had been filed late and that it was not *prima*



*facie* relevant.

2.3 The Board finds that the admittance of D11, given its late filing, was at the discretion of the opposition division. The opposition division applied the criterion of *prima facie* relevance of D11 which was the appropriate criterion in the situation (Case Law of the Boards of Appeal, 10th Edition 2022, IV.C.4.5.3). The Board does not find in the statement of grounds of appeal any reason to assume that the opposition division used its discretion not to admit D11 in an unreasonable way (statement of grounds of appeal, sections A.3 and 3.15) or a justification as to why the Board should reverse the decision of the opposition division not to admit D11. The Board also does not see circumstances that would justify the admittance of D11 in appeal under Article 12(4) and (6) RPBA. The Board therefore finds that there is no reason to reverse the decision of the opposition division not to admit D11 into the proceedings.

2.4 D12 was submitted by the appellant with their letter of 25 June 2024 (i.e. after the statement of grounds of appeal and before the communication of the board under Article 15(1) RPBA) in order to show that carbon black influenced the density of the composition. The appellant argued at the oral proceedings that D12 was filed as a supplement to D11. The appellant did not explain why D12 could only be filed at a late stage in appeal and was not filed in opposition. Since D11 is not admitted into the proceedings and D12 is intended to address the same point concerning the use of carbon black as in D11 (statement of grounds of appeal, item 3.15), the Board does not find any justification to admit D12 into the appeal proceedings as D12 could and should have been filed before the opposition division.

Therefore the Board exercises its discretion under Article 13(1) RPBA by not admitting document D12 into the proceedings.

- 2.5 The appellant also provided document D13 with their letter of 23 August 2024, after the communication of the Board under Article 15(1) RPBA of 17 July 2024. The admittance of D13 into the proceedings underlies the requirements of Article 13(2) RPBA which stipulate that any amendment to a party's appeal case made after the expiry of a period specified by the Board in a communication under Rule 100, paragraph 2, EPC or, where such a communication is not issued, after notification of a communication under Article 15, paragraph 1, shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned. D13 was said to have been filed to further confirm that D1 did not implicitly disclose a composition having an  $\eta_{747}$  of at least 700 kPa.s, an argument that had already been made during the opposition procedure (letter of 23 August 2024, item A). In this respect the Board does not see the presence of exceptional circumstances that could justify the admittance of D13 at this stage of the proceedings. Since D1 was the document seen as representing the closest prior art in the notice of opposition (item B starting on page 16) and considered as the closest prior art in opposition also by the patent proprietor (reply to the notice of opposition, item 4.2) and in view of the fact that it was considered as the closest prior art in the decision under appeal (items 2.4.3.2 and 2.4.3.3), the argument of the appellant that D13 was filed in reply to the preliminary opinion of the Board that confirmed that D1 could be considered as the closest prior art cannot justify the presence of

exceptional circumstances. In view of this, document D13 is not taken into account under Article 13(2) RPBA.

Main request (patent as granted) and auxiliary request 1

3. While a number of novelty objections were maintained by the respondent in appeal, the Board found it appropriate to first review the decision of the opposition division on inventive step starting from document D1, which led to non-allowance of the patent as granted and of auxiliary requests 1 to 3 in opposition, based on the reasons on which this decision is contested in appeal.
4. Inventive step over D1
  - 4.1 The opposition division established in their decision on inventive step that both D1 and D8 could be considered as equally valid documents representing the closest prior art for claim 1 of the main request (decision under appeal, section 2.4.3.2). The opposition division addressed inventive step of the main request in view of D1 only and arrived at the conclusion that claim 1 of the main request lacked an inventive step over D1 (decision under appeal, section 2.4.3.3). The same conclusion applied to claim 1 of auxiliary requests 1-3.
  - 4.2 It is apparent from the arguments of the appellant on inventive step in the statement of grounds of appeal that it is only the choice of D1 as the closest prior art by the opposition division that was contested therein (statement of grounds of appeal, pages 15-19, sections 3.6-3.21). The appellant in particular argued that D8 was more relevant than D1 as document representing the closest prior art and that the choice

of D1 as the closest prior art was based on hindsight (statement of grounds of appeal, section 3.20). The appellant also referred to case law (Case Law of the Boards of Appeal, 10th Edition 2022, I.D.3.5.5 and in particular the decisions T 641/89 and T 713/97) to support their argument that, essentially, where the invention concerns improving a process to manufacture a known chemical compound, then the closest prior art should be confined to documents describing that compound and its manufacture (statement of grounds of appeal, sections 3.9-3.11). In this respect the appellant contended that D8 disclosed the same composition as claim 1 of the main request and that D8 and not D1 should have been chosen as the document representing the closest prior art.

- 4.3 The case law cited by the appellant concerns situations in which the aim of the invention is to improve a process to manufacture a known chemical compound (Case Law of the Boards of Appeal, 10th Edition 2022, I.D. 3.5.5). In these situations, it was found that the closest prior art should be confined to documents describing the known compound and its manufacture since the comparison with these alone showed whether an improvement of the process had been achieved which could thus be taken into account in formulating the problem the invention sought to solve. This case law is, however, not applicable to the present case. Firstly, claim 1 does not concern the manufacture of a known chemical compound, but the manufacture of a composition, specifically a multimodal polyethylene composition. On this basis alone, the cited case law does not apply. Moreover, it has not been shown that the multimodal polyethylene composition manufactured by the process of claim 1 corresponds to the multimodal polyethylene composition in D8, the document alleged

to be the closest prior art by the appellant, which is a further reason why the choice of the closest prior art in the present case should not be confined to D8 alone.

4.4 There is no doubt that D1 concerns the production of multimodal polyethylene compositions of the same type as the patent in suit, even if there is some dispute between the parties whether all properties defined in granted claim 1 are met or not. Already on that basis, the Board does not find that hindsight is present in the selection of D1 as the closest prior art and considers that D1 is a suitable starting point for the analysis of inventive step in line with the decision of the opposition division.

4.5 Indeed, the opposition division had already established that D1 related to the provision of polyethylene compositions based on two ethylene polymers suitable for the production of pipes and addressed the problem of sagging, i.e. the same problem as in the patent in dispute (decision under appeal, section 2.4.3.2). It was in particular shown in the decision under appeal that D1 disclosed polymeric melding compositions which were made from a first ethylene polymer (A) and a second ethylene polymer (B) which also contained an ultra-high molecular weight polyethylene (B1) (D1, claim 1). D1 therefore is in the same field as the patent in suit, appears to disclose compositions that are comparable to those of the patent in suit and addresses the same overall problem (patent in suit, paragraph 1). Even though D1 does not disclose a number of features that are used to define claim 1 of the main request, such as the viscosity average molecular weight of the ultra-high molecular weight polyethylene, the molecular weight of the ethylene polymer (A), the MFR<sub>5</sub>

and the density of the polyethylene resin (B) as defined in claim 1 of the main request (letter of the appellant of 23 August 2024, item 8 on page 6), the Board finds that the choice of D1 as the closest prior art document was nevertheless justified and was realistic because of its similar purpose and the shared features of the multimodal polyethylene composition of D1 with the composition manufactured in the process of claim 1 of the patent in suit.

- 4.6 Since in the statement of grounds of appeal the arguments on inventive step were solely based on D8 as the closest prior art (see sections 3.22 to 3.36), the Board finds that the appellant did not contest therein the problem solution approach starting from D1 and its conclusion as laid out in the decision under appeal once it is established that D1 is a suitable document to be taken as the closest prior art document.
- 4.7 The appellant provided a line of defence contesting the reasoning of the opposition division when D1 was taken as the closest prior art for the first time in appeal with their letter of 23 August 2024 (items 9-15 starting on page 6), i.e. after the communication of the Board under Article 15(1) RPBA of 17 July 2024. The admittance of that line of defence into the appeal proceedings was contested by the respondent. The appellant argued in this respect that section 3.1 of the statement of grounds of appeal and the discussion of inventive step submitted for auxiliary requests 8 and 9 already showed that the conclusion of the decision under appeal on inventive step starting from D1 had been contested. However, section 3.1 of the statement of grounds of appeal only mentions that the application of the problem and solution approach to the subject matter of claim 1 of the main request would

show that the decision of the opposition division to deny the presence of an inventive step was not correct. The Board does not find in that statement any reasoning on the question of inventive step that would address the decision under appeal starting from D1 as the closest prior art. The Board does also not find in the discussion of inventive step of auxiliary requests 8 and 9 in items 1.3-1.6 on pages 25 and 26 of the statement of grounds of appeal, which only addresses the feature added to claim 1 of these claims (the limitation of the viscosity  $\eta_{747}$ ), a reasoning that would show in how far the decision under appeal on the question of inventive step of claim 1 of the main request over D1 should be reversed. The Board therefore finds that the disputed line of defence was first submitted in their letter of 23 August 2024 (items 9-15). The appellant did not show the presence of exceptional circumstances according to Article 13(2) RPBA that would justify the admittance of that line of defence provided after the communication of the Board under Article 15(1) RPBA. The Board does therefore does not admit the new line of defence into the proceedings under Article 13(2) EPC.

4.8 The Board does therefore not see any reason to overturn the decision under appeal on the question of inventive step of claim 1 of the main request over D1 as the closest prior art. The same conclusion also applies to auxiliary request 1 submitted with the statement of grounds of appeal as claim 1 of auxiliary request 1 is identical to claim 1 of the main request.

4.9 There is therefore no need to consider any further point for these requests.

## Auxiliary requests

5. Change of order of the auxiliary requests - admittance
  - 5.1 The appellant submitted with the statement of grounds of appeal a main request (claims as granted) as well as auxiliary requests 1-16 that were all part of the opposition proceedings, albeit in a different order (statement of grounds of appeal, section A.2). It was undisputed that auxiliary requests 1-4 upon which the decision under appeal was based correspond to auxiliary requests 1, 8, 9 and 16 submitted with the statement of grounds of appeal. It can be derived from the statement of grounds of appeal (page 2) that auxiliary requests 2-7 and 10-15 in appeal correspond to auxiliary requests 16-23, 6, 7, 10, 11, 20 and 21 before the opposition division respectively.
  - 5.2 The respondent requested that auxiliary requests 2-7 and 10-15 be not admitted in appeal under Article 12(4) RPBA (rejoinder, page 3, section II.2). It was apparent from the rejoinder that the respondent contested the order of the auxiliary requests submitted in appeal on the grounds that the requests should have been presented in an order that avoided requests which were not dealt with in the decision under appeal being considered before requests which were dealt with in the decision, in particular before the request which was found by the opposition division to meet the requirements of the EPC.
  - 5.3 Indeed, as the auxiliary requests 8, 9 and 16 in appeal (corresponding to auxiliary requests 2, 3 and 4 before the opposition division) were placed above auxiliary requests 2-7 and 10-15 during the opposition proceedings, auxiliary requests 2-7 and 10-15 were



never procedurally active as there was no need for the opposition division to decide on these requests once a higher ranking request was found allowable. As the opposition division could not decide on these requests, there was also no decision for the Board to review for these requests.

- 5.4 Article 12(2) RPBA stipulates that in view of the primary object of the appeal proceedings to review the decision under appeal in a judicial manner, a party's appeal case shall be directed to (*inter alia*) requests on which the decision under appeal was based. Article 12(4) RPBA adds that any part of a party's appeal case which does not meet the requirements in paragraph 2 is to be regarded as an amendment, unless the party demonstrates that this part was admissibly raised and maintained in the proceedings leading to the decision under appeal, and that any such amendment may be admitted only at the discretion of the Board. The Board notes that auxiliary requests 2-7 and 10-15 are not requests on which the decision was based and that the change of order clearly amounts to an amendment of the appellant's case which would cause the Board to decide on points not decided upon by the opposition division in view of the deliberate choice of the appellant. It is indeed apparent from the facts of the case that the appellant (then patent proprietor) deliberately chose the order of the requests submitted at the oral proceedings before the opposition division (Minutes, page 1, section 2) and therefore the Board has no doubts that the claims of auxiliary requests 2-7 and 10-15 submitted in appeal could have been made procedurally active before the opposition division if the patent proprietor had chosen to do so. The Board does also not see in the present case circumstances

that could justify a change in the order of the requests as they are submitted in appeal.

5.5 The Board therefore exercises its discretion under Article 12(4) RPBA by not admitting auxiliary requests 2-7 and 10-15 into the proceedings.

6. Auxiliary requests 8 and 9

6.1 Inventive step

6.1.1 Claim 1 of auxiliary request 8 corresponds to claim 1 of the main request with the following addition at the end of the claim: "wherein multimodal polymer composition has a viscosity  $\eta_{747}$  of at least 700 kPa·s measured at a shear stress of 747 Pa".

6.1.2 The opposition division established that D1 was the closest prior art for claim 1 of auxiliary request 2 which corresponds to claim 1 of auxiliary request 8 in appeal (decision under appeal, section 4.2.3). The opposition division considered that the minimum value defining the range of viscosity  $\eta_{747}$  was very low. As a result, a process according to claim 1 of the main request would lead to a multimodal polyethylene composition having a viscosity  $\eta_{747}$  of at least 700 kPa·s measured at a shear stress of 747 Pa, especially since the examples of the patent in suit having contents of ultra-high molecular weight polyethylene of 8.8 to 16 wt% (table 1) all have  $\eta_{747}$  values significantly higher than 700 kPa·s (Table 2, 940-2260 kPa·s).

6.1.3 The appellant argued that D1 was silent about the  $\eta_{747}$  values of the compositions and that there was no hint in D1 that  $\eta_{747}$  values of above 700 kPa·s would be

implicitly disclosed (statement of grounds of appeal, section H, item 1.4).

6.1.4 The Board, however, finds that the evidence cited in appeal indicates that a multimodal polymer composition having a viscosity  $\eta_{747}$  of at least 700 kPa·s measured at a shear stress of 747 Pa can be reached merely by working within the ambit of D1. In particular, D8 teaches the presence of 5-45 wt.-% of ultra-high molecular weight polyethylene in the polyethylene resin (B) (claim 1) and the inventive examples of D8 show that all multimodal polyethylene compositions containing 10 wt.-% of ultra-high molecular weight polyethylene (UHMWPE1) all have a viscosity  $\eta_{747}$  well above the threshold of 700 kPa·s (Table 4; example 2: 1957 kPa·s, example 3: 6029 kPa·s and example 4: 18662 kPa·s). That teaching of D8 is relevant to D1 which discloses (page 5, lines 27-30) the use of a comparable amount of ultra-high molecular weight polyethylene (15-40 wt.-%) in the polyethylene resin (B) (corresponding to resin (A) according to the definition of claim 1 of auxiliary request 8). The Board therefore finds the conclusion of the opposition division that working within the ambit of D1, disclosing the presence of 15-40 wt.-% of ultra-high molecular weight polyethylene would lead to a viscosity  $\eta_{747}$  above the threshold of 700 kPa·s to be reasonable. The arguments of the appellant in appeal did not show that that conclusion was wrong. The Board therefore has no reason to overturn the decision under appeal on the question of inventive step of auxiliary request 8 in view of D1 as the closest prior art. The same conclusion also applies to auxiliary request 9 submitted with the statement of grounds of appeal as claim 1 of auxiliary request 9 is identical to claim 1 of auxiliary

request 8.

7. Auxiliary request 16 as submitted with the statement of grounds of appeal corresponds to auxiliary request 4 that was found by the opposition division to meet the requirements of the EPC (decision under appeal, section 6). As the patent proprietor is the sole appellant, the request is not the subject of the present appeal.

## Order

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

The appeal is dismissed.

The Registrar:

The Chairman:



D. Hampe

D. Semino

Decision electronically authenticated