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**Datasheet for the decision  
of 8 January 2019**

**Case Number:** T 1869/15 - 3.3.03

**Application Number:** 03006241.8

**Publication Number:** 1460105

**IPC:** C08L23/06

**Language of the proceedings:** EN

**Title of invention:**

Polymer composition

**Patent Proprietor:**

Borealis Technology Oy

**Opponents:**

INEOS Europe AG  
Univation Technologies, LLC

**Relevant legal provisions:**

EPC Art. 123(2), 84  
RPBA Art. 13(1), 12(4), 13(3)

**Keyword:**

Amendments - added subject-matter (yes) - main request as filed with statement of grounds of appeal

Claims - clarity (no)- second auxiliary request submitted with statement of grounds of appeal

Amended requests - admitted - (no) - Main and first auxiliary requests as submitted with letter 4 January 2019; Third auxiliary request submitted at oral proceedings

**Decisions cited:**

R 0014/10

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
**Chambres de recours**

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Case Number: T 1869/15 - 3.3.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.03**  
**of 8 January 2019**

**Appellant:** Borealis Technology Oy  
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**Respondent:** INEOS Europe AG  
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**Representative:** Smith, Julian Philip Howard  
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**Respondent:** Univation Technologies, LLC  
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**Representative:** Boulton Wade Tennant LLP  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 10 July 2015  
revoking European patent No. 1460105 pursuant to  
Article 101(3) (b) EPC.**

**Composition of the Board:**

<b>Chairman</b>	D. Marquis
<b>Members:</b>	M. C. Gordon
	C. Brandt

## Summary of Facts and Submissions

I. The appeal lies from the decision of the opposition division posted on 10 July 2015 revoking European patent number 1 460 105.

II. The application as filed had 12 claims whereby claim 1 read as follows:

"A multimodal polyethylene polymer comprising a low molecular weight ethylene homo-polymer fraction and a high molecular weight ethylene copolymer fraction, characterised in that:

- the low molecular weight fraction is present in an amount of 45 to 55% by weight;
- the high molecular weight fraction is present in an amount of 45 to 55 % by weight;
- the multimodal polymer has a MFR<sub>5</sub> of greater than 0.10g/10 min; and
- the multimodal polymer has a density of greater than or equal to 952 kg/m<sup>3</sup>."

III. The patent was granted with a set of 8 claims, whereby claim 1 read as follows, differences compared to claim 1 of the application as originally filed being indicated in **bold**:

"A multimodal polyethylene polymer composition comprising a low molecular weight ethylene homo-polymer fraction **having a weight average molecular weight of about 5000 to 50000 g/mol** and a high molecular weight ethylene copolymer fraction **having a weight average molecular weight of about 300000 to 900000 g/mol**, characterised in that:

- the low molecular weight fraction is present in an amount of **47** to **52%** by weight;

- the high molecular weight fraction is present in an amount of **48** to **53** % by weight;
- the multimodal polymer has a MFR<sub>5</sub> of greater than 0.10g/10 minutes, **and of less than or equal to 0.22g/10 min, measured according to ISO1133;**
- the multimodal polymer has a density of greater than or equal to **953** kg/m<sup>3</sup>."

Claims 2-6 were directed to preferred embodiments of the multimodal polyethylene polymer composition, claim 7 to the use of the composition in the production of a pipe and claim 8 to the resulting pipe.

IV. Notices of opposition were filed against the patent by:

Opponent I: Ineos Europe AG

Opponent II Univation Technologies LLC,

both opponents invoked the grounds pursuant to Article 100(a) EPC (lack of novelty, lack of inventive step) and Article 100(c) EPC. Opponent OII also invoked Article 100(b) EPC.

V. The decision of the opposition division was based on the claims of the patent as granted as main request and 7 auxiliary requests.

According to the decision, none of the requests on file met the requirements of Article 123(2) EPC.

Furthermore, auxiliary request VII was not admitted into the proceedings.

Accordingly the patent was revoked.

VI. The appellant/patent proprietor lodged an appeal against the decision.

Together with the statement of grounds of appeal, sets of claims forming a main request and first to fourth auxiliary requests were submitted, whereby the main request corresponded to the claims of the patent as granted.

- VII. Both respondent/opponents replied to the written submissions of the appellant.
- VIII. The appellant made a further written submission dated 28 July 2016 and provided a set of claims as fifth auxiliary request.
- IX. The Board issued a summons to oral proceedings and a communication.

*Inter alia* the Board queried the allowability pursuant to Article 123(2) EPC of the wording "polymer composition" in the granted claims, considering that the application as originally filed had been directed to a "polymer" and with reference to statements in the description indicating that the "polymer" and "polymer composition" were distinct entities.

It was also stated that the scope of the proceedings would be restricted to consideration of the issues of added subject-matter and clarity.

- X. With letters dated 7 December 2018, 13 December 2018 and 4 January 2019 the appellant filed amended main and first auxiliary requests. Only the letter of January 2019 mentioned the existing requests, stating that these were maintained as subordinate auxiliary requests.

Claim 1 of the newly filed main request (version of

4 January 2019) differed from claim 1 of the patent as granted in that:

- the claim was directed to a "Multimodal polyethylene polymer", the term "composition" having been deleted;
- the properties of the two fractions (MFR, co-monomer content and density) were defined as follows:

"[...] and the low molecular weight fraction has a melt index  $MFR_2$  of 100 to 2000 g/10 min, a content of alpha-olefin co-monomer of less than 0.5% by mole and a density of 965 to 977 kg/m<sup>3</sup>

and the high molecular weight fraction has a melt index  $MFR_{21}$  of 0.01 to 1 g/10min, a content of co-monomer of 0.4 to 4.0 % and a density of 915 to 935 kg/m<sup>3</sup>."

The first auxiliary request differed from the main request in that the range of  $MFR_2$  for the low molecular fraction was specified as 300-2000 g/cm<sup>3</sup>.

XI. With letter of 21 December 2018 respondent/opponent OII took position on the newly filed requests, raising objections in respect of their admittance and their allowability pursuant to Article 123(3) EPC.

XII. Oral proceedings were held before the Board on 8 January 2019.

In the course of the oral proceedings the appellant withdrew the first and third to fifth auxiliary requests as submitted with the statement of grounds of appeal and the letter of 28 July 2016.



A new set of claims designated third auxiliary request was submitted.

Claim 1 of this request read as follows:

"A bimodal polymer mixture consisting of one low molecular weight ethylene homo-polymer fraction having a weight average molecular weight of about 5000 to 50000 g/mol, a melt index MFR<sub>2</sub> of 100 to 2000 g/10 min a content of alpha-olefin comonomer of less than 0.5% by mole, and a density of 965 to 977 kg/m<sup>3</sup>

and

one high molecular weight ethylene copolymer fraction having a weight average molecular weight of about 300000 to 900000 g/mol, a melt index MFR<sub>21</sub> of 0.01 to 1 g/10 min, a content of co-monomer of 0.4 to 4.0 % by mole, and a density of 915 to 935 kg/m<sup>3</sup>

characterised in that:

- the low molecular weight fraction is present in an amount of 47 to 52 % by weight;
- the high molecular weight fraction is present in an amount of 48 to 53 % by weight;
- the bimodal polymer mixture has a MFR<sub>5</sub> of greater than 0.10 g/10 min; and of less than or equal to 0.22 g/10min, measured according to ISO 1133;
- the bimodal polymer mixture has a density of greater than or equal to 953 kg/m<sup>3</sup>."

XIII. The arguments of the appellant can be summarised as follows:

(a) Main request and first auxiliary request of January 2019 - admittance

The requests had been provided in the light of the observations of the Board with respect to allowability of the amendment related to the term "composition", and the negative preliminary findings with respect to admittance of the first auxiliary request. The newly submitted requests simplified the matters to be discussed at the oral proceedings. No new issues were raised. The deletion of "composition" did not result in objections arising pursuant to Article 123(3) EPC.

(b) Main request as filed with the statement of Grounds of Appeal

(i) Status

The absence of any indication of the status of this request in the letters of 7 December 2018 and 13 December 2018 was not to be interpreted as indicating that the request had been abandoned. On the contrary, as stated in the letter of 4 January 2019, this request was maintained.

(ii) Added subject-matter

Specification of the molecular weights of the two fractions without specifying other properties as set out in the application as

originally filed (page 11) did not represent a contravention of Article 123(2) EPC. The melt flow rate (MFR) and molecular weight were in any case correlated, meaning that the definition of either of these provided the same information and restriction, such that it was not problematic in view of Article 123(2) EPC to recite only one of these features.

The recitation of the various polymer parameters on page 11 of the application did not indicate that all of these features were mandatorily in combination with each other. On the contrary, the wording indicated that these features could be relied upon singly or in any combination to characterise the polymer. Referring only to one or any subset thereof did not represent an intermediate generalisation.

No new technical information was present in the claims as amended compared to those of the application as originally filed. Regarding the term "composition" it followed from the description of the application as filed that the terms "polymer" and "polymer composition" were not clearly distinguished and were used interchangeably.

(c) Second auxiliary request as filed with the statement of grounds of appeal

(i) Admittance

This request had been filed in order to address the findings of the decision with respect to the specified range of the MFR of the LMW fraction, and hence in order to counter the reasons leading to rejection of this request by the opposition division. The provision of this request also resulted in a simplification of the case.

(ii) Added subject-matter

The restriction to a bimodal polymer had a basis in several parts of the description, making clear that this was a generally preferred embodiment. The description - page 11 - also provided a link between the properties of the fractions and the feature "bimodal".

(iii) Clarity

The claim defined the measurement standard and method to be applied. Furthermore, the claim was limited to combinations of only two fractions. It was possible to determine the properties of each of these fractions. The fact that the different methods available for the determination (by calculation) of the MFR of the *in situ* formed polymer might yield different

results did not justify finding that the claim was unclear.

- (d) Third auxiliary request - filed at the oral proceedings before the Board - admittance

The deletion of the reference to the ISO1133 standard clearly and directly addressed the objections raised with respect to the second auxiliary request. Furthermore this matter had not been discussed in the preliminary opinion of the Board meaning there had been no reason or opportunity to advance the request at an earlier stage of the procedure.

XIV. The arguments of the respondents can be summarised as follows:

- (a) Main request filed with letter dated 4 January 2019 - admittance

The main request changed the appellant's case and had been filed very late; even the first version had been filed just a month before the oral proceedings, and the present version only a matter of days before.

The problem caused by the introduction of the term "composition" was by no means new and had not been raised for the first time by the Board. On the contrary, this had been addressed in the Notice of Opposition of Respondent/Opponent II. There would have been adequate opportunity and cause during the opposition proceedings, or at the very latest with the statement of grounds of appeal, to make the amendment now proffered.

Furthermore the deletion of the term "composition" raised issues pursuant to Article 123(3) EPC and for this reason alone the request should not be admitted.

- (b) First auxiliary request filed with letter dated 4 January 2019 - admittance

The same considerations applied as for the main request January 2019.

- (c) Main request as filed with the statement of grounds of appeal

- (i) Status

In the letters of 7 and 13 December 2018 no mention had been made of this request. The wording employed in these letters - "A new main request is provided..." indicated clearly that the previous main request was no longer pursued. The reintroduction of this request in the letter of 4 January 2019, less than a week before the oral proceedings represented a late change of case that could not have been foreseen and should not be allowed.

- (ii) Added subject-matter

The specification in the claim of certain features from the original disclosure in isolation of others, whereby the original application had disclosed all of said features mandatorily in combination

constituted an intermediate generalisation. It was not the case, as argued by the appellant, that specifying one of either the molecular weight or melt flow rate automatically constrained the other to the range as originally disclosed. Although these properties were correlated, the exact nature of the correlation and the conversion factors depended on the particular polymer under consideration and in particular was influenced by the manner of its preparation. Likewise the other properties disclosed in the description in combination with the molecular weight but not present in the claims were not constrained by the molecular weight. Claim 1 of the main request did not meet the requirements of Article 123(2) EPC

(d) Second auxiliary request as submitted with the statement of grounds of appeal

(i) Admittance

The request could have been submitted during opposition proceedings since the underlying issues had been identified at that stage. Furthermore the appellant had failed to explain how the request would overcome the objections raised in the decision under appeal in respect of the then operative second auxiliary request.

(ii) Added subject-matter

Claim 1 defined a combination of features

which was not disclosed in the application as originally filed.

(iii) Clarity

It was not possible to determine unambiguously the MFR of the HMW fraction. At most an estimation was possible. However such estimation required detailed knowledge of the origin of the polymer (catalysts employed, reactors, conditions etc.). The various parameters/coefficients necessary to carry out the calculations were thus specific to a given polymer and not generally applicable. Furthermore, a number of estimation methods, which gave differing results were available.

Hence it was inherently impossible to ascertain whether a given polymer fell under the claim.

(e) Third auxiliary request filed at the oral proceedings before the Board - admittance

The request was late (very), addressed issues which had formed part of the discussion in proceedings before the opposition division and was not *prima facie* allowable. The issue of the definition of the measurement standard for MFR was not a minor or purely formal issue:

- there was no way to determine the melt index of the second component meaning it was impossible to ascertain whether a given polymer fell within the scope of the claim;



- as a consequence the subject-matter claimed was not clearly distinguished/distinguishable from the prior art.

The problem with former auxiliary request 2 had been identified by the opposition division - this was consequently not a new issue. The third auxiliary request should therefore not be allowed into the proceedings.

- XV. The appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the claims according to the main request or in the alternative, on the basis of the first auxiliary request, both requests filed with letter dated 4 January 2019, or in the alternative on the basis of the main request or the second auxiliary request as filed with the statement of grounds of appeal, or in the alternative on the basis of the third auxiliary request as filed during the oral proceedings on 8 January 2019.
- XVI. The respondents I and II requested that the appeal be dismissed.

### **Reasons for the Decision**

- 1. Main request filed on 4 January 2019 - admittance

The issue relating to the introduction of the term "composition" to the claims had been raised at the outset of the opposition proceedings by Respondent/Opponent OII in section 8 of the Notice of Opposition, and had been identified as an issue relating to Article

123(2) EPC for discussion in section 2.2 of the communication of the opposition division dated 16 October 2014.

Although not forming part of the reasons underlying the decision under appeal, this matter was again raised by respondent/opponent OII on page 5, 5th complete paragraph of its rejoinder to the statement of grounds of appeal.

Accordingly there would have been a reason to submit the amendment made in the present main request (deletion of the term "composition") during the opposition proceedings, or at the very latest, following the reply of respondent/opponent OII to the statement of grounds of appeal. There is therefore no justification for the filing of that request after the communication of the Board, in particular as the Board did not raise any new issue in that respect but merely gave a preliminary opinion based on the arguments advanced by the parties on that point.

The submission of this amendment at the very end of the written appeal proceedings in the form of the newly filed main request introduces a new issue to the appeal proceedings arising from the deletion of a feature that was present in the granted claims, namely it is now necessary - for the first time - to address the matter of Article 123(3) EPC. This constitutes a change of case which, due to its nature complicates the proceedings both procedurally and substantively.

Under these circumstances, the Board considers it appropriate to make use of the discretion permitted pursuant to Articles 12(4) and 13(1) RPBA not to admit

the request to the proceedings.

2. First auxiliary request submitted with letter of 4 January 2019 - admittance

Claim 1 of the first auxiliary request contains the same amendment relating to the definition of the polymer as claim 1 of the main request.

The same considerations therefore apply as for the main request, with the result that this request is not admitted to the proceedings.

3. Main request submitted with the statement of grounds of appeal

- 3.1 Admittance

In the letters dated 7 and 13 December 2018, introducing the new main and first auxiliary requests, no explicit statement was made as to the fate of any existing requests previously filed in appeal.

While the status of the main request was ambiguous in view of the wording "A new main request is provided....to take into consideration the issues addressed in the summons..." (7 December 2018 section 1.1) or "We are enclosing a new main request as well as a new first auxiliary request" (13 December 2018), there was conversely no statement in these letters that the intention was to withdraw the existing requests. Indeed, had the letter of 4 January 2019 not been filed, in which the status of the pre-existing requests was clarified then in view of Article 113(2) EPC it would have been incumbent on the Board at the outset of the oral proceedings to establish which were the

requests for discussion - see also R 14/10, section 6.1.

The conclusion is therefore that there were no indications to be taken from the December 2018 submissions of the appellant that the intention was to withdraw the pre-existing requests and in particular the main request, in whole or in part.

Since the main request submitted with the statement of grounds of appeal cannot be seen as having been withdrawn it is still in the appeal proceedings.

### 3.2 Added subject-matter

Claim 1 of the main request, which corresponds to claim 1 as granted, defines the weight average molecular weight of the ethylene homopolymer fraction and ethylene copolymer fraction by means of numerical ranges. The ranges specified are to be found on page 11, second and third paragraph of the application as originally filed.

In this passage, both ranges are only disclosed in combination with specific ranges of melt index ( $MFR_2$  and  $MFR_{21}$ ) for the LMW and HMW fractions respectively, the content of comonomers and the density which are however not part of claim 1. The relevant paragraphs on page 11 of the application employ the conjunction "and" indicating that all - and not merely some - of these features have to be satisfied. It is also not the case that the specification of the molecular weight serves as a form of "proxy" for the other features specified, in particular MFR such that no additional specification of these is necessary.

Whilst there is in principle a degree of correlation between the melt flow and the molecular weight of the ethylene polymer, this correlation is not universal. The nature of such a correlation is specific to a given polymer and in particular depends on the method of production (catalyst, conditions etc). Similarly although the co-monomer content and density do bear some relationship to or influence the molecular weight this is not to the extent that their values are irrevocably defined and constrained once the molecular weight is specified.

The second and third paragraphs, respectively, of page 11 of the application as originally filed define both low and high molecular weight ethylene fractions by means of a list of features for each of which there is no indication that these can be taken in isolation from each other, or that they constitute alternative - equivalent ways of defining these fractions. It is therefore concluded that the subject-matter of claim 1 of the main request as submitted with the statement of grounds of appeal represents an intermediate generalisation of the subject-matter that is disclosed in the application as originally filed with the consequence that the requirements of Article 123(2) EPC are not satisfied.

4. Second auxiliary request as filed with the statement of grounds of appeal

4.1 Admittance

In proceedings before the opposition division the first and second auxiliary requests were refused on the grounds of Article 123(2) EPC *inter alia* due to the definition of the lower limit of the  $MFR_2$  (Decision,

page 10 first line and the two paragraph following the bullet-pointed section). The proffered amendment of the definition of MFR<sub>2</sub> to 100-2000g/10min can therefore be seen as a response to the findings of the decision. The request was filed with the statement of grounds of appeal, i.e. at the outset of the appeal proceedings. Accordingly the Board can identify no reason not to admit this to the proceedings.

#### 4.2 Clarity

The bimodal polymer mixture according to claim 1 of the second auxiliary request of this claim is defined *inter alia* by the MFR<sub>21</sub> of the high molecular weight (HMW) fraction. That mixture is prepared in the patent in two steps in a reactor cascade whereby in the first step the LMW fraction is prepared and a second step during which the HMW fraction is produced in the presence of the LMW fraction (paragraph [0027]). As explained in paragraph [0031] the resulting product is an intimate mixture of the two fractions.

Whilst it is possible to measure the MFR of the fraction of the first stage since this is obtained - initially - in isolation, such a determination is not possible for the second stage fraction since this is only ever obtained in mixture with the first stage fraction. That as such shows a contradiction within claim 1 which requires that the melt index of both fractions be measured.

Even if one were to accept that the melt index of the second fraction could be calculated instead, several calculation methods exist and it is a matter of general knowledge in the field that the values of melt index calculated by these methods not only depend on the

method chosen but also on a number of assumptions and parameters that are specific to a given method. Claim 1 however neither identifies the calculation method to be used nor any of the assumptions in respect of the parameters necessary to perform the calculation with accuracy

The consequence is that it is not possible on the basis of the final composition to ascertain reliably whether a given fraction meets the requirements of the claim with the result that the requirements of Article 84 EPC that the claims shall provide a clear definition of the subject-matter is not met.

#### 4.3 Added subject-matter

In the light of the foregoing it is not necessary for the Board to arrive at a decision on the compliance of the claims with the requirements of Article 123(2) EPC.

#### 5. Third auxiliary request - submitted during oral proceedings before the Board - admittance

Claim 1 of this request differs from claim 1 of the second auxiliary request in that the definition of the standard for the determination of the MFR has been deleted from the definition of the LMW and HMW fractions.

This amendment does not address the objection raised since the problem arising from the definition of the MFR in particular of the HMW fraction remains, and potentially has been exacerbated by the deletion of the standard for both fractions.

Furthermore throughout the appeal proceedings all of

the sets of claims advanced which were directed to a bimodal polymer specified the standard for the determination of MFR. The submission - at the very final stage of the appeal proceedings - of a claim where there are some values specified with relation to this standard and others where the standard is not invoked raises issues which are new in the context of the appeal proceedings. The ramifications of this could not be assessed or appreciated within the confines of the oral proceedings, meaning that pursuant to Article 13(3) RPBA the request is not to be admitted.

## Order

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

The appeal is dismissed.

The Registrar:

The Chairman:



B. ter Heijden

D. Marquis

Decision electronically authenticated