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**Datasheet for the decision  
of 14 June 2023**

**Case Number:** T 0742/20 - 3.3.03

**Application Number:** 11736091.7

**Publication Number:** 2596059

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**Language of the proceedings:** EN

**Title of invention:**  
POLYETHYLENE COMPOSITION

**Patent Proprietor:**  
Ineos Europe AG

**Opponents:**  
TotalEnergies One Tech Belgium  
The Dow Chemical Company

**Relevant legal provisions:**  
EPC Art. 56

**Keyword:**  
Inventive step - all requests (no)

**Decisions cited:**  
G 0003/14, T 0035/85, T 0197/86, T 0939/92



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Case Number: T 0742/20 - 3.3.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.03**  
**of 14 June 2023**

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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
17 March 2020 concerning maintenance of the  
European Patent No. 2596059 in amended form.**

**Composition of the Board:**

**Chairman**            D. Semino  
**Members:**            O. Dury  
                             L. Basterreix

## **Summary of Facts and Submissions**

- I. The appeals of opponents 1 and 2 lie from the interlocutory decision of the opposition division concerning maintenance of European patent No. 2 596 059 in amended form according to the claims of the main request filed with letter of 20 February 2019 and an adapted description.
- II. The following document was, among others, cited in the decision under appeal:
- D13: WO 2008/131817
- III. In the decision under appeal, the opposition division in particular reached the conclusion that the subject-matter of claim 1 of the main request involved an inventive step when starting from document D13 as the closest prior art.
- IV. Opponents 1 and 2 (appellants 1 and 2) both lodged an appeal against that decision.
- V. With their statement of grounds of appeal, appellant 1 filed two documents, including:
- D16: D. Cicmil et al., Angew. Chem. Int. Ed., 2015, 54, pages 13073-13079
- VI. With their rejoinder to the statements of grounds of appeal, the patent proprietor (respondent) filed six sets of claims as first to sixth auxiliary requests.

VII. The parties were summoned to oral proceedings and a communication indicating specific issues to be discussed at the oral proceedings was then sent to the parties.

VIII. Oral proceedings were held on 14 June 2023 in the presence of all parties (via videoconference).

IX. The **final requests** of the parties were as follows:

(a) The appellants requested that the decision of the opposition division be set aside and that the patent be revoked.

(b) The respondent requested that the appeals be dismissed (main request) or, in the alternative, that the decision of the opposition division be set aside and the patent be maintained in amended form according to any of the first to sixth auxiliary requests filed with their rejoinder to the statements of grounds of appeal.

X. Claim 1 of the **main request** read as follows

"1. Polyethylene composition comprising

(a) 45-55wt% of a copolymer fraction (A) comprising ethylene and a C<sub>4</sub>-C<sub>10</sub> alpha-olefin, and having an MI<sub>2</sub> of from greater than 300 to 800 g/10min and a weight average molecular weight Mw of from 15 to 35 kDa; and

(b) 45-55wt% of a copolymer fraction (B) comprising ethylene and a C<sub>4</sub>-C<sub>10</sub> alpha-olefin,

wherein the composition has an unpigmented density of 942 to 954 kg/m<sup>3</sup>, an MI<sub>5</sub> of 0.2 to 0.7 g/10 min and an

$\eta_{210\text{kPa}}$  of less than 6 kPa.s."

Claim 1 of **the first auxiliary request** differed from claim 1 of the main request in that the range of unpigmented density was limited to "945 to 950 kg/m<sup>3</sup>" (instead of "942 to 954 kg/m<sup>3</sup>").

Claim 1 of **the second auxiliary request** differed from claim 1 of the first auxiliary request in that the amount of copolymer fraction (A) was limited to "48-51 wt%" (instead of "45-55 wt%") and the amount of copolymer fraction (B) was limited to "49-52 wt%" (instead of "45-55 wt%").

Claim 1 of **the third auxiliary request** differed from claim 1 of the main request in that the following feature was added therein (before "wherein ..."):

"both of copolymer (A) and copolymer (B) independently containing between 0.2 and 1.3 mol% of alpha-olefin".

Claim 1 of **the fourth auxiliary request** differed from claim 1 of the third auxiliary request in that the composition being claimed was further defined by the following feature, which was added at the end of the claim:

", and a substantially uniform or reverse comonomer distribution in one or both of fractions (A) and (B)."

Claim 1 of the **fifth auxiliary request** and of the **sixth auxiliary request** differed from claim 1 of the third auxiliary request and of the fourth auxiliary request, respectively, in that the range of alpha-olefin contained in both copolymers (A) and (B) was limited to

"between 0.3 and 1 mol%" (instead of "between 0.2 and 1.3 mol%").

XI. The appellants' arguments, in so far as they are pertinent for the present decision, may be derived from the reasons for the decision below. They are essentially as follows:

- (a) The subject-matter of claim 1 of the main request did not involve an inventive step when document D13 was taken as the closest prior art;
- (b) The first, second, fifth and sixth auxiliary requests should not be admitted into the proceedings;
- (c) The subject-matter of claim 1 of each of the first to the sixth auxiliary requests did not involve an inventive step when document D13 was taken as the closest prior art.

XII. The respondent's arguments, in so far as they are pertinent for the present decision, may be derived from the reasons for the decision below. They are essentially as follows:

- (a) The subject-matter of claim 1 of the main request involved an inventive step when document D13 was taken as the closest prior art;
- (b) The first, second, fifth and sixth auxiliary requests should be admitted into the proceedings;
- (c) The subject-matter of claim 1 of each of the first to the sixth auxiliary requests involved an inventive step when document D13 was taken as the

closest prior art.

## **Reasons for the Decision**

### **Main request**

1. The operative main request is the main request on which the decision under appeal is based. Appellants 1 and 2 contested the decision of the opposition division regarding inventive step of claim 1 of that main request when document D13 was taken as the closest prior art.
2. Inventive step
  - 2.1 Closest prior art and distinguishing feature(s)
    - 2.1.1 All parties agreed with the conclusions of the opposition division that:
      - D13 constituted a suitable document to be taken as the closest prior art;
      - The subject-matter of claim 1 of the main request differed from the disclosure of the example of D13 in that the polymer fraction (A) was a copolymer derived from ethylene and a C<sub>4</sub>-C<sub>10</sub> alpha-olefin (instead of a polyethylene homopolymer in D13).
    - 2.1.2 During the appeal proceedings, and in particular at the oral proceedings before the Board, all parties considered as starting point for the analysis of inventive step the (sole) example illustrative of the teaching of D13 (see section 2 on pages 15 to 17 of



D13, in particular the third column "Example" from the table; said example is referred to in the present decision as "the example of D13" - which is to be distinguished from the comparative example of D13, disclosed in the fourth column of the same table), as was done in writing by appellant 2 (statement of grounds of appeal: page 2, third paragraph).

a) Said example of D13 discloses a bimodal polyethylene composition produced in a multistage reaction comprising a prepolymerisation stage, followed by a first polymerisation stage in a loop reactor and a second polymerisation stage in a gas phase reactor (D13: page 15, section 2, first paragraph). The details of the polymerisation conditions applied and of the properties of the polymers prepared at each stage are given in table 1 on pages 15 and 16 of D13. It remained undisputed that a low molecular weight component is prepared in the (first) loop reactor (labelled "A2" in table 1 of D13), with a split of 48 wt.% and a  $MI_2$  of 450 g/10min, whereby no comonomer is present and the weight average molecular weight is not given. Also undisputed was that a high molecular weight component is prepared in the (second) gas phase reactor (A3) with hexene as a comonomer and with a split of 50 wt.%. It was further common ground that the final composition has a density of  $947 \text{ kg/m}^3$  (before compounding, i.e. corresponding to the "unpigmented density" according to operative claim 1 and as defined in paragraph 18 of the patent in suit).

b) In that respect, the respondent agreed with appellant 2 that the weight average molecular weight (Mw) feature of the low molecular weight component of D13 (polyethylene prepared in the first - loop - reactor after the prepolymerisation step, which

corresponds to fraction (A) of operative claim 1), which is not explicitly specified for the example of D13, is nevertheless satisfied (appellant 2's statement of grounds of appeal: page 2, last three paragraphs; rejoinder to the statements of grounds of appeal: page 3, last full paragraph).

c) Under these circumstances, the Board has no reason to be of an opinion different from the one of the parties or the opposition division regarding the selection of the example of D13 as starting point for the analysis of inventive step as well as regarding the identification of the features distinguishing the subject-matter of operative claim 1 therefrom (indicated in point 2.1.1 above).

2.2 Problem effectively solved over the closest prior art

2.2.1 The main issue in dispute between the parties was if the problem effectively solved over the closest prior art, i.e. the example of D13, may be formulated in the form of an improvement in view of the comparison of examples 1 and 3 with comparative example 2 of the patent in suit.

2.2.2 In that respect, comparative example 2 of the patent in suit was carried out with a kind of catalyst different from the one of the example of D13 (see D13: page 15, second paragraph above the table). Indeed, it remained undisputed that catalyst Lynx 200 used in the example of D13 (page 15, section 2., second paragraph) is a Ziegler-Natta catalyst, i.e. a catalyst of a catalyst family different from the one of the metallocene catalyst used in comparative example 2 of the patent in suit (paragraphs 88 and 109-112 of the patent in suit, from which it is derivable that all the examples of the

patent in suit were carried out using a metallocene catalyst). This is acknowledged by the respondent as possibly having an impact on the overall properties of the composition being prepared (rejoinder: page 9, second paragraph, in respect of the fourth auxiliary request).

In addition, at least some of the properties of the composition prepared in comparative example 2 of the patent in suit are incompatible with the overall teaching of D13 (see e.g. the requirements in terms of density and  $\text{SHI}_{2.7/210}$  defined in claim 1 of D13). Therefore, comparative example 2 of the patent in suit does not illustrate the teaching of the example of D13 and - at least for that reason - it cannot be concluded that examples 1, 3 and comparative example 2 of the patent in suit allow to make a fair comparison between the subject-matter being claimed and the closest prior art. This conclusion was not contested by the respondent at the oral proceedings before the Board.

2.2.3 However, according to established case law (Case Law of the Boards of Appeal of the EPO, 10th edition, 2022, I.D.4.3.2; see in particular T 35/85: section 4 of the reasons, and T 197/86, OJ EPO 1989, 371: section 6.1.3 of the reasons), it is accepted that the patent proprietor (here, the respondent) may discharge his onus of proof by voluntarily submitting comparative tests with newly prepared variants of the closest state of the art identifying the features common with the invention, in order to have a variant lying closer to the invention so that the advantageous effect attributable to the distinguishing feature is thereby more clearly demonstrated. In that respect, if comparative tests are chosen to demonstrate an inventive step on the basis of an improved effect over

a claimed area, care should nevertheless be taken that the nature of the comparison with the closest state of the art is such that the alleged advantage or effect is convincingly shown to have its origin in the distinguishing feature of the invention compared with the closest state of the art.

a) In that respect, since - as indicated in section 2.2.2 above - comparative example 2 of the patent in suit does not illustrate the teaching of D13 in view of the requirements of the composition defined in claim 1 of D13 (which are not all satisfied by the composition prepared in comparative example 2 of the patent in suit), it cannot constitute a variant of the closest prior art at least for that reason.

b) In addition, it is noted that according to page 12, third paragraph of D13 both Ziegler-Natta (as apparently used in the example of D13) or metallocene catalysts (as used in the examples of the patent in suit) may be used. However, the respondent stated at page 9, second paragraph of their rejoinder, that the effects shown in the patent in suit were believed to be possibly related to the nature of the catalyst used (Ziegler-Natta vs. metallocene). Should that view be adhered to (to the respondent's benefit and in view of the commonly accepted strong impact of the catalyst chosen on the product properties), the effect relied upon by the respondent would at least in part be dependent on the nature of the catalyst used: this would further confirm that comparative example 2 of the patent in suit (which was carried out with a metallocene catalyst) cannot be seen as a variant of the closest prior art (carried out with a Ziegler-Natta catalyst) which allows a fair comparison with the

subject-matter being claimed.

- 2.2.4 During the oral proceedings before the Board, the respondent put forward that, should the homopolymer of example 1 of D13 be replaced by a copolymer according to feature (a) of operative claim 1, it would be expected that the same beneficial effect as the one shown in the examples of the patent in suit (improved mechanical properties while maintaining good flexibility) would be obtained. That view had been accepted by the opposition division, who concluded that the patent proprietor's arguments in that respect were credible (reasons: section 2.3.3.3, see in particular the end of the first and second paragraphs on page 7), so the respondent.

However, that line of argumentation is, in the Board's view, not in line with the argument of the respondent indicated in above section 2.2.3.b that the effects shown in the patent in suit were believed to be at least in part related to the nature of the catalyst being used. At least for that reason, the Board does not share the respondent's view that it can be expected that the same improvements would be mandatorily obtained should a copolymer instead of a homopolymer be used in the example of D13. In addition, the respondent's argument is not based on any evidence and, also in view of the known influence of the catalyst on the product properties, can only be held to be a mere conjecture, as put forward by appellant 2 during the oral proceedings before the Board. For these reasons, that argument did not convince.

- 2.2.5 In view of the above, even if it were accepted that the examples of the patent in suit illustrated that the above indicated distinguishing feature was related to a

technical effect (which was in dispute between the parties), it could not be concluded that it was credibly shown that said effect was demonstrated over the closest prior art. Therefore, there is no need for the Board to analyse any further whether or not the examples of the patent in suit demonstrate that a technical effect is related to the above indicated distinguishing feature.

2.2.6 For these reasons, no technical effect related to the above indicated distinguishing feature was shown to be achieved over the closest prior art and the technical problem effectively solved over that closest prior art is seen as residing in the provision of a further polyethylene composition, in alternative to the one of the example of D13.

2.3 Obviousness

2.3.1 The question remains to be answered if the skilled person, desiring to solve the problem defined in above section 2.2.6, would, in view of the closest prior art, possibly in combination with other prior art or with common general knowledge, have modified the disclosure of the closest prior art in such a way as to arrive at the claimed subject matter.

2.3.2 Considering that D13 itself teaches that the low molecular weight polyethylene fraction produced therein may either be a homopolymer or a copolymer (see e.g. claim 1, fraction (A)), it would be obvious to prepare an alternative polyethylene composition to the one of the example of D13 by preparing a copolymer instead of a homopolymer in the first - loop - reactor (after the prepolymerisation step). Although it is indicated in D13 that said first polyethylene fraction is preferably

a homopolymer or a polymer having no content of comonomer (D13: page 8, last full paragraph; page 13, first paragraph), it remains that, in order to provide a mere alternative to the example of D13, it would be obvious to modify the example of D13 according to any embodiment within the ambit of D13, including by preparing a copolymer instead of a homopolymer in the first reactor of the example of D13 as indicated in claim 1 thereof.

2.3.3 That conclusion is further confirmed by the fact that, as put forward by appellant 2 (see e.g. statement of grounds of appeal: page 5, third paragraph), it is explicitly stated in D13 (page 8, last full paragraph) that an ethylene homopolymer as intended in that document relates to an ethylene polymer that consists substantially, i.e. to at least 98 wt.%, of ethylene units. This means that a copolymer of ethylene containing comonomers in an amount of less than 2 wt.% would still be considered a homopolymer according to D13. However, such a polymer would also be a copolymer (A) according to operative claim 1, which is not limited in respect of the amount of comonomer. That conclusion is further confirmed by paragraph 23 of the patent in suit in which copolymer (A) is defined as preferably containing at least 0.03 mol.% comonomer. In that respect, the respondent's view that the passage at the end of page 8 of D13 was a mere legal definition rather than a technical teaching (letter of 18 November 2021: page 3, fourth paragraph) is not persuasive and is not shared by the Board.

2.3.4 During the oral proceedings before the Board, the respondent argued that apart from claim 1 of D13 (and the corresponding passage on page 5 of the description thereof), there was no other disclosure in that

document regarding the use of two copolymer fractions. It was further most usual in the art to prepare a bimodal polyethylene composition that comprises a low molecular weight homopolymer fraction and a high molecular weight copolymer fraction, as was indeed done in the example of D13. Therefore, the skilled person would have had no motivation to modify the example of D13 so as to prepare a polyethylene composition comprising two copolymer fractions as defined in operative claim 1, so the respondent.

a) However, the fact that claim 1 of D13 explicitly discloses that the first (low molecular weight) polymer (A) defined therein may be an ethylene homo- or copolymer fraction is sufficient to render obvious the modification of example 1 of D13 by preparing a copolymer fraction instead of a homopolymer in the first - loop - polymerisation reactor (A2).

b) In addition, it is established case law of the Boards of Appeal of the EPO that the answer to the question as to what a person skilled in the art would have done depends on the technical result (s)he wished to obtain (see e.g. T 939/92, OJ EPO 1996, 309: point 2.5.3 of the reasons; see also Case Law, *supra*, I.D.5). In the case in hand, since the skilled person is merely seeking to provide a further polyethylene composition in alternative to the one of the closest prior art, there is no need for a motivation or a hint in the prior art to undertake the modification needed in order to arrive at the subject-matter being claimed. It is rather sufficient that such a modification remains within the ambit of the teaching of the prior art document (here, D13). In doing so, the Board is satisfied that the above conclusion is not reached based on hindsight, but by considering which



modifications of the prior art disclosure would be considered to be obvious by the skilled person aiming at solving the problem posed.

2.3.5 In view of the above, the subject-matter of claim 1 of the main request does not involve an inventive step in view of D13 as the closest prior art.

2.3.6 Therefore, the main request is not allowable (Article 56 EPC).

### **First and second auxiliary requests**

3. Inventive step

3.1 It was not disputed by the respondent that the amendments carried out in claim 1 of each of the first and second auxiliary requests constitute no additional distinguishing feature over the example of D13 (see letter of 18 November 2021, last full paragraph on page 4 and paragraph bridging pages 4 and 5; this was further acknowledged at the oral proceedings before the Board). Therefore, these auxiliary requests can only share the same fate as the main request regarding inventive step in view of D13, i.e. they are not allowable (Article 56 EPC).

3.2 In view of the conclusion reached in the precedent paragraph, there is no need for the Board to deal with the issue of admittance of the first and second auxiliary requests, which was in dispute between the parties (appellant 2's letter of 21 June 2021: last paragraph on page 1 and first paragraph on page 2).

### **Third auxiliary request**

4. Inventive step
- 4.1 Claim 1 of the third auxiliary request differs from claim 1 of the main request in that the limitation "both of copolymer (A) and copolymer (B) independently containing between 0.2 and 1.3 mol% of alpha-olefin" is added.
- 4.2 It remained undisputed at the oral proceedings before the Board that, as put forward by the respondent (rejoinder: page 8, first paragraph on inventive step), the copolymer prepared in the second (gas phase) reactor (A3) in the example of D13 contains 1.7 mol.% of comonomer (see amount of comonomer of 2.5 wt.% for the whole composition disclosed on page 16, last line of D13). Therefore, the amendment made constitutes an additional feature that effectively distinguishes the subject-matter of claim 1 of the third auxiliary request from the example of D13 (which still constitutes the closest prior art).
- 4.3 However, it was common ground that no technical effect had been demonstrated in relation to that additional distinguishing feature. Therefore, the problem effectively solved over the closest prior art remains the same as the one defined in respect of claim 1 of the main request, namely to provide a further polyethylene composition, in alternative to the one of the example of D13.
- 4.4 Under these circumstances, it remains to be assessed if that additional distinguishing feature may confer an inventive step.

- 4.4.1 In that respect, in order to arrive at the subject-matter being claimed, the skilled person would have to reduce the amount of comonomer in the high molecular weight fraction of the example of D13 (polyethylene prepared in the second - gas phase - reactor (A3)) so as to be in the range now defined in claim 1. Simultaneously, that person would have to use also an amount of comonomer according to operative claim 1 in the copolymer to be prepared as low molecular weight component in the first - loop - reactor (A2).
- 4.4.2 However, the appellants have shown that it would be possible to do so while remaining within the teaching of D13 (appellant 1's letter of 28 June 2021: page 9, last paragraph; appellant 2's letter of 21 June 2021: paragraph bridging pages 4 and 5). In addition, since the problem to be solved resides in the provision of a mere alternative to the example of D13, no incitation to do so is necessary, as outlined in section 2.3.4.b above (contrary to the respondent's view: letter of 18 November 2021: page 5, third paragraph, whereby the same line of argumentation was pursued at the oral proceedings before the Board).
- 4.4.3 The respondent put forward that the only significant difference between the example and the comparative example of D13 was the comonomer content. Considering that the comparative example exhibited poorer physical properties and that claim 1 of D13 specified that the whole polyethylene composition should exhibit a comonomer content of higher than 2.0 wt.%, the skilled person would understand that high levels of comonomer were important and would not have been motivated to reduce the amount of comonomer (rejoinder: page 8, fourth paragraph, which was further pursued at the oral proceedings before the Board).

However, the example and comparative example of D13 do not only differ in the amount of comonomer used, but also in the nature of said comonomer (hexene in the example; butene in the comparative example: see D13, table on page 16, entries "C4/C2" and "C6/C2"). In addition, as indicated above, the Board agrees with the appellants' view that the ranges of comonomers as defined in claim 1 of the fourth auxiliary request are within the ambit of D13. Therefore, the respondent's argument did not convince.

4.4.4 In view of the above, it was obvious to prepare a further polyethylene composition in alternative to the one of example 1 of D13 by preparing a copolymer in the first polymerisation reactor while reducing the amount of comonomer in the second polymerisation reactor so as to arrive at a composition according to claim 1 of the third auxiliary request, which in particular satisfies the requirement that both copolymers contain between 0.2 and 1.3 mol% of alpha-olefin.

4.5 For these reasons, the subject-matter of claim 1 of the third auxiliary request does not involve an inventive step when starting from D13 as the closest prior art and the third auxiliary request is, as a whole, not allowable (Article 56 EPC).

#### **Fourth auxiliary request**

5. Inventive step

5.1 Claim 1 of the fourth auxiliary request differs from claim 1 of the third auxiliary request in that it is further specified that the composition being claimed

has "a substantially uniform or reverse comonomer distribution in one or both of fractions (A) and (B)".

- 5.2 In that respect, it was in particular in dispute between the parties if the amendment made effectively constituted a distinguishing feature over the disclosure of the example of D13, which remained the closest prior art.
- 5.3 In that regard, both appellants expressed concerns regarding the exact meaning of the amendment made, among others in relation to the term "substantially uniform comonomer distribution" (see e.g. statement of grounds of appeal of appellant 1: bottom of page 24 and top of page 25; the objection was pursued by both appellants at the oral proceedings before the Board).
- 5.3.1 It was not contested that the term "substantially uniform comonomer distribution" was already present, in the same context, in claim 2 as granted and that, for that reason, clarity pursuant to Article 84 EPC cannot be examined at the present stage of the proceedings (G 3/14, OJ EPO 2015, 102).
- 5.3.2 In that respect, the Board considers that on the basis of common general knowledge the skilled person would understand from the wording of claim 1 of the fourth auxiliary request "Polyethylene composition comprising (a) ... a copolymer fraction (A) ... and (b) a copolymer fraction (B) ... , wherein the composition has ... and a substantially uniform or reverse comonomer distribution in one or both of fractions (A) and (B)" that the term "substantially uniform ... comonomer distribution in one or both of fractions (A) and (B)" makes reference to the distribution of comonomer content across the molecular weight range of

the particular fraction. This conclusion is in particular in agreement with the indication in reference [11] of D16 (page 13078: right hand side column; although both D16 and said reference [11] were published after the priority/filing date of the patent in suit, it remained undisputed that the content of that reference reflected common general knowledge) regarding the definition of a "reverse distribution" and is further in line with the indications in paragraphs 30 and 32 of the patent in suit.

5.3.3 However, it was not shown that the term "substantially uniform", in particular when used to describe such a comonomer distribution, has an unambiguous meaning in the art. Therefore, according to established case law, the normal rule of claim construction is that the terms used in a claim should be given their broadest technically sensible meaning in the context of the claim in which they appear. In that respect, all parties referred to the content of paragraph 30 of the patent in suit, according to which, a "uniform" comonomer distribution may be defined as "a comonomer distribution in which there is no increasing or decreasing trend across the full width of the molecular weight distribution of the polymer fraction". However, no criteria are given in the patent in suit which would allow the skilled person to decide unambiguously when such a trend may be held to be present or not. It was also not shown that such criteria were known in the art. In addition, the same paragraph 30 of the patent in suit proposes an alternative definition for the term "uniform" comonomer distribution, namely that it corresponds to a situation in which the "comonomer content of the polymer fractions across the molecular weight range of the particular fraction varies by less than 10wt%, preferably by less than 8wt%, more

preferably by less than 5wt%, and most preferably by less than 2wt%". Therefore, in that case, a "uniform" comonomer distribution does not correspond to a situation in which no "trend" is recognisable, but rather to a situation in which the variability in comonomer content is limited to a certain range. Independently of which of these definitions is used to characterise a "uniform" comonomer distribution, the ambiguity regarding the exact meaning of the wording of claim 1 further increases because of the use of the word "substantially" since no indication is provided, either in the claim or in the patent specification, as to its meaning. Therefore, it cannot be determined how the limits of the term "uniform", which are already undefined for the reasons given above, are further broadened therewith.

5.3.4 In view of the above, the meaning of the term "substantially uniform comonomer distribution" added to claim 1 of the fourth auxiliary request is vague and cannot be precisely established.

5.4 It remains to be assessed whether the term "substantially uniform comonomer distribution" may nevertheless distinguish the subject-matter being claimed from the disclosure of the example of D13.

5.4.1 In that respect, no evidence is on file regarding whether or not said feature is satisfied by the polyethylene composition according to the example of D13. In particular, no evidence was provided by the respondent in reaction to the argument put forward by appellant 1 at the outset of the appeal proceedings (statement of grounds of appeal: section 3.5), in particular regarding its suitability to achieve any delimitation over the prior art due to the lack of a

clear meaning for the term "substantially uniform" (statement of grounds of appeal of appellant 1: section 3.5, bottom of page 24 to middle of page 25).

5.4.2 The respondent argued that the amendment made was "believed to imply" that at least one of the fractions (A) and (B) defined in claim 1 had to be prepared with a metallocene catalyst and not with a Ziegler-Natta catalyst - as was used in the example of D13 - (rejoinder: page 9, first sentence regarding inventive step of the fourth auxiliary request; letter of 18 November 2021: penultimate paragraph).

a) However, in the absence of any evidence regarding the comonomer distribution of the fractions of the polyethylene composition obtained with the catalyst used in the example of D13 it cannot be concluded that the specific catalyst used in the example of D13, for which it remained undisputed at the oral proceedings before the Board that it was indeed a Ziegler-Natta catalyst, does not lead to a "substantially uniform" comonomer distribution taking into account the ambiguous meaning attributable to that term (see section 5.3 above).

b) During the oral proceedings before the Board, the respondent argued that, according to established case law, the burden of proof in opposition proceedings relied primarily on the opponents (here the appellants) who had to show that a feature specified in a claim was directly and unambiguously disclosed in the prior art (letter of 18 November 2021: page 5, penultimate paragraph, whereby the argumentation was pursued at the oral proceedings before the Board). In the present case, since the appellants had not shown that the



catalyst used in the example of D13 effectively led to a uniform comonomer distribution as now defined in claim 1 of the fourth auxiliary request, the feature "substantially uniform comonomer distribution" was to be seen as distinguishing the subject-matter of operative claim 1 from the disclosure of the example of D13, so the respondent.

However, considering the particularly vague and ambiguous meaning which can be attributed to the term "substantially uniform" (as outlined in section 5.3 above), the feature "substantially uniform comonomer distribution" can only be seen as a broad and unclear feature. In addition, according to established case law, each of the parties to the proceedings bears the burden of proof for the facts it alleges (Case Law, *supra*, III.G.5.1.1). Also, it has to be taken into account that the respondent decided to amend the wording of the operative claims using the amendment indicated in section 5.1 above to further distinguish the subject-matter being claimed from the disclosure of the example of D13 (as compared to the higher ranked requests), whereby very little information - if any - is provided in the patent in suit about the definition of that term. Under these circumstances, the Board arrived at the conclusion, after careful consideration of the parties' submissions, that it would have been the duty of the respondent to demonstrate that the amendment made was effectively suitable to fulfil that aim, i.e. that the respondent should have demonstrated that the feature "substantially uniform comonomer distribution" was effectively suitable to distinguish the subject-matter being claimed from the example of D13. Since this was not done, the respondent's line of argumentation did not succeed.

c) Contrary to the respondent's view (which was put forward at the oral proceedings before the Board), the fact that the disputed feature was indeed present in claim 2 as granted does not change the conclusion reached in the precedent paragraph since the Board's concerns regarding the ambiguity of the term "substantially uniform comonomer distribution" in the context of claim 1 of the fourth auxiliary request would also be valid for claim 2 as granted.

5.4.3 For these reasons, the amendment regarding the requirement in terms of a "substantially uniform comonomer distribution" does, in the present case, not constitute an additional distinguishing feature of claim 1 of the fourth auxiliary request (as compared to claim 1 of the third auxiliary request) over the example of D13.

5.5 In view of the above, the fourth auxiliary request has to share the same fate as the third auxiliary request regarding inventive step in view of D13 and the fourth auxiliary request is not allowable (Article 56 EPC).

#### **Fifth and sixth auxiliary requests**

6. Claim 1 of the fifth and sixth auxiliary requests correspond to claim 1 of the third and fourth auxiliary requests, respectively, in which the amount of comonomer defined in each of fraction (A) and (B) was further limited.

6.1 It was agreed by the respondent at the oral proceedings before the Board that claim 1 of the fifth and sixth auxiliary requests can only share the same fate regarding inventive step in view of D13 as the closest prior art as claim 1 of the third and fourth auxiliary

requests, respectively. Therefore, for the same reasons as the ones outlined in sections 4 and 5 above, claim 1 of each of the fifth and sixth auxiliary requests is not inventive and these requests are not allowable (Article 56 EPC).

- 6.2 In view of the conclusion reached in the precedent paragraph, there is no need for the Board to deal with the issue of admittance of the fifth and sixth auxiliary requests, which was in dispute between the parties (see appellant 2's letter of 21 June 2021: last paragraph on page 1 and first paragraph on page 2).
7. Since neither the main request, nor any of the first to sixth auxiliary requests is allowable, 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:



D. Hampe

D. Semino

Decision electronically authenticated