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# Datasheet for the decision of 19 March 2025

**Case Number:** T 0793/23 - 3.3.03

**Application Number:** 16382094.7

**Publication Number:** 3214211

**IPC:** D01F6/46, E01C13/08, D01F6/30, D01F6/04

**Language of the proceedings:** EN

**Title of invention:**
ARTIFICIAL TURFS AND METHOD OF MAKING THE SAME

**Patent Proprietor:**
Dow Global Technologies LLC

**Opponent:**
TotalEnergies OneTech Belgium

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

**Keyword:**
Inventive step (yes) non-obvious alternative

**Decisions cited:**
T 0939/92

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**Case Number: T 0793/23 - 3.3.03**

# D E C I S I O N
# of Technical Board of Appeal 3.3.03
# of 19 March 2025

| | |
|---|---|
| **Appellant:** (Opponent) | TotalEnergies OneTech Belgium<br>Zone Industrielle C<br>7181 Seneffe (BE) |
| **Representative:** | De Clercq & Partners<br>Edgard Gevaertdreef 10a<br>9830 Sint-Martens-Latem (BE) |
| **Respondent:** (Patent Proprietor) | Dow Global Technologies LLC<br>2040 Dow Center<br>Midland, MI 48674 (US) |
| **Representative:** | Boult Wade Tennant LLP<br>Salisbury Square House<br>8 Salisbury Square<br>London EC4Y 8AP (GB) |
| **Decision under appeal:** | **Interlocutory decision of the Opposition Division of the European Patent Office posted on 2 March 2023 concerning maintenance of the European Patent No. 3214211 in amended form.** |

**Composition of the Board:**

| | |
|---|---|
| **Chairman** | M. Barrère |
| **Members:** | F. Rousseau |
| | M. Millet |

## Summary of Facts and Submissions

I. The appeal lies from the interlocutory decision of the opposition division according to which European patent No. 3 214 211 as amended according to the claims of Auxiliary Request 12 submitted with letter of 16 January 2023 and a description adapted thereto met the requirements of the EPC.

II. The following items of evidence were *inter alia* submitted during the opposition proceedings:

D1: B. Monrabal *et al.*, "Crystallization Elution Fractionation. A New Separation Process for Polyolefin Resins", Macromol. Symp. 2007, 257, pages 71-79
D2: N. Chokputtanawuttilerd *et al.*, "Mathematical Modeling of Crystallization Elution Fractionation of Ethylene/1-Octene Copolymers", Macromol. Chem. Phys. 2015, 216, pages 621-635
D5: EP 2 752 509 A1

III. The reasons for the contested decision which are relevant to the appeal proceedings are those concerning Auxiliary Request 12:

(a) Sufficiency of disclosure and novelty were acknowledged.

(b) As regard inventive step, the closest prior art was represented by the linear low density polyethylene (LLDPE) of Example 3 of D5, from which the subject-matter of claim 1 differed by the $I_{10}/I_2$ which was slightly higher than the claimed upper limit of

6.7, and the CEF feature. There was no clear evidence of a synergistic technical effect between these distinguishing features, which could therefore be assessed separately.

In the absence of a suitable comparison between the polymers or filaments of the patent and those of D5, that would allow to identify a technical effect, the problem successfully solved resided in the provision of a further LLDPE composition for artificial turf.

Concerning obviousness of these measures, D5 did not teach the use of lower $I_{10}/I_2$ ratios, and if the skilled person were to consider doing so, it would not be sufficient to change the melt index, since all the properties of the polymer were linked and the $I_{10}$ would also be affected by a change in the molecular structure, which also applied to the CEF.

With respect to the second distinguishing feature, D5 only disclosed the CDC parameter, but not a CEF distribution. Thus, D5 did not give any hint to work with the specific CEF distribution defined in the contested patent.

An inventive step was thus acknowledged.

(c) The patent was therefore maintained on the basis of the claims of Auxiliary Request 12 and a description adapted thereto.

IV. An appeal against that decision was lodged by the opponent (appellant).

V. With its reply to the statement of grounds of appeal, the patent proprietor (respondent) submitted two sets of claims labelled Auxiliary Request 1 and Auxiliary Request 2.

VI. In preparation of the oral proceedings, a communication pursuant to Article 15(1) RPBA conveying the Board's provisional opinion was issued.

VII. Oral proceedings before the Board were held on 19 March 2025.

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

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

The respondent requested that the appeal be dismissed, or alternatively that the decision under appeal be set aside and that the patent be maintained, on the basis of Auxiliary Request 1 or Auxiliary Request 2 submitted with the reply to the statement of grounds of appeal.

IX. Relevant to the present decision is only claim 1 of the Main Request submitted as Auxiliary Request 12 with letter of 16 January 2023. It reads as follows:

"1. A linear low density polyethylene composition consisting of linear low density polyethylene and which exhibits each of the following properties:

(1) a CEF fraction from 70 to 90°C of equal to or greater than 80% of the total CEF fractions, measured according to the method described in Monrabal et al, Macromol. Symp. 257, 71-79 (2007);

(2) a melt index, $I_2$, measured according to ASTM D 1238 (2.16 kg @190°C), in the range of equal to or greater than 2.0 g/10 min and equal to or less than 5.0 g/10 min; and

(3) a melt flow ratio, $I_{10}/I_2$ of equal to or less than 6.7, melt index $I_{10}$ is measured according to ASTM D-1238 (10 kg @ 190°C).

X. The parties' submissions, in so far as they are pertinent to the present decision, may be derived from the reasons for the decision below. They concerned the question whether the LLDPE composition in accordance with claim 1 of the Main Request involved an inventive step over the LLDPE composition designated in D5 as "Inv. Comp. Ex. 3".

## Reasons for the Decision

*Main Request*

1. The only issue concerning the Main Request in the appeal proceedings is inventive step.

*Closest prior art*

2. According to paragraph [0003] of the contested patent, various polymerisation techniques using different catalyst systems have been employed to produce linear low density polyethylenes (LLDPE) suitable for yarn productions for artificial turf applications, typically by an extrusion process. It was an object of the present invention to provide a LLDPE composition that allows to run at higher extrusion line speed during artificial turf yarn monofilament production, without compromising curl, shrinkage and mechanical performance (specification, paragraph [0004]).

The LLDPE for the production of turf yarn in accordance with Example 3 of D5, as described in paragraphs [0044] and Tables 1 to 5 of that document, designated therein as "Inv. Comp. Ex. 3", is in agreement with the position of the opposition division, considered by both parties to be a suitable starting point for assessing inventive step. The Board has no reason to have a different opinion and therefore takes the LLDPE of that Example 3 of D5 as the closest prior art.

*Distinguishing features*

3. According to the contested decision (Reasons, point 5.3.1), the LLDPE composition of operative claim 1 differed from the closest prior art, in that

(i) the $I_{10}/I_2$ ratio is equal to or less than 6.7, i.e. lower than in the closest prior art and

(ii) the CEF fraction from 70 to 90°C of the total CEF fractions is of at least 80%.

The appellant disputes the existence of these two distinguishing features, without, however, disputing that novelty over D3 is given (statement of grounds of appeal, sections 4.5 to 4.15 and 4.20 to 4.23). The appellant essentially contends (i) that the definition in operative claim 1 of a CEF fraction from 70 to 90°C of the total CEF fraction is ambiguous, as the measurement conditions for the CFE measurement would not be clearly defined, and (ii) that a value of at least 80% for this parameter would constitute an alternative definition for defining a narrow comonomer distribution, equivalent to the Comonomer Distribution Constant (CDC) parameter used in D5.

*Alleged ambiguity of the CEF fraction from 70 to 90°C*

3.1 Regarding the alleged ambiguity which would result from the absence of definition of the operating conditions used for the CEF measurement, it is submitted that the method specified in claim 1 by reference to D1 gives two possible sets of conditions (statement of grounds of appeal, page 3, section 4.7).

The appellant refers to Figures 5 and 6, which show a CEF distribution obtained by measuring the same sample at a different crystallisation and heating rate, and submits that D1 would report in the passage on page 76, right column, last paragraph, that for the same sample, the area covered by the CEF fraction from 70 to 90°C would be different in the two figures under the two sets of conditions. The two test conditions mentioned in the passage cited by the appellant are a crystallisation rate of 5 °C/min or 10 °C/min with a heating rate of 10 °C/min.

The respondent submits that it would be common general knowledge, that a slower cooling rate may be chosen to increase the resolution of the CEF test (rejoinder, page 5, last sentence of point 4.8).

3.1.1 D1 describes on page 76, right column, lines 6-13 that the analysis performed at very fast crystallisation and heating rates of 10 °C/min, still gives a good separation of the three components of the resin tested, as shown in Figure 5, corroborating thereby the respondent's argument that a slower cooling rate increases the resolution and therefore the precision of the measurement. However, it is not stated in D1 that the two sets of conditions used in D1 would decisively affect the precision of the measurement of the ratio of a given fraction between two temperatures to the total fractions measured over the whole range of temperatures covered. This is an interpretation of D1 made by the appellant which is not corroborated by any evidence. As pointed out by the respondent (rejoinder, page 5, point 4.10), the appellant has not provided any proof as to how the alleged ambiguity would affect the scope of claim 1, i.e. the precision of the measurement of the

ratio of the CEF fraction from 70 to 90°C to the total CEF fractions.

3.1.2 The mere fact that the peak around 70°C might be slightly shifted and its intensity might be different when using these two sets of conditions does not say anything about the value of the ratio of the CEF fraction from 70 to 90°C to the total CEF fractions.

3.1.3 The appellant submits, with reference to D2 (section 4.1 and Figure 12), that the comonomer content also influences a CEF profile (statement of grounds of appeal, page 4, section 4.8). This may be true, but in the absence of further explanation, there is no reason to consider that the alleged ambiguity of the ratio of the CEF fraction from 70 to 90°C to the total CEF fractions or the precision of the measurement is for a given LLDPE dependent on its comonomer content.

3.1.4 Finally, the appellant submits that the measurement conditions defined in claim 1 are those described in Monrabal et al, Macromol. Symp. 257, 71-79 (2007), D1 in the present proceedings. It is correct that these conditions appear to be different from those described in paragraph [0111] of D1 with a crystallisation at 3°C/min and elution at 3°C/min.

Even if these conditions were to be read into claim 1 by the skilled person, it has not been shown that they would have a decisive influence on the ratio of the CEF fraction from 70 to 90°C to the total CEF fractions and thus on the assessment of inventive step (see point 3.1.1 above).

*Alleged equivalence between the CEF fraction defined in claim 1 and the CDC parameter used in D5*

3.2 The appellant also submits that a CEF fraction from 70 to 90°C of at least 80% of the total CEF fractions would be a definition of a narrow comonomer distribution, equivalent to the CDC parameter used in D5.

The appellant's contention is based only on an alleged similarity of (i) the general teaching concerning the catalyst, the reactor, the comonomer content and the same density range for the production of the LLDPE polymer in the opposed patent and D5 (statement of grounds of appeal, pages 4 and 5, sections 4.12 to 4.14) and (ii) the properties of the inventive composition of Example 1 of the patent in suit and those of the composition of Example 3 of D5, as reported in Table 1 in section 4.22 of the statement of grounds of appeal.

This is not convincing.

3.2.1 While a CEF fraction from 70 to 90°C being at least 80% of the total CEF fractions as defined in operative claim 1 and a CDC of at least 40, as required by claim 1 of D5, may both be intended to define a narrow comonomer distribution, it is not apparent that the two definitions are quantitatively equivalent. In this respect, it is irrelevant that the highest CDC value obtained for all the inventive examples in D5 is that of Example 3 of D5 (159.7), which thus must have a narrow comonomer distribution, as submitted by the appellant. Although that distribution might be narrow, the absence of any indication of a quantitative relationship between the degree of narrowness of the

comonomer distribution and each of the two parameters used in D5 and in the patent in suit does not allow for the conclusion that a CDC value of 159.7 necessarily implies a ratio of the CEF fraction of at least 80% as required by operative claim 1.

3.2.2 Moreover, since it is not stated either in D5 or in the patent in suit that following the general teaching given in either of these documents would be sufficient to prepare a LLDPE exhibiting a CDC of equal to or greater than 40 (as defined in claim 1 of D5) or a CEF fraction from 70 to 90°C being at least 80% of the total CEF fractions (as defined in operative claim 1), it cannot be concluded, also based on a comparison of the general conditions for the preparation of the LLDPE described in D5 and in the patent in suit, that the two definitions of the comonomer distribution are quantitatively equivalent.

3.2.3 Furthermore, as pointed out by the respondent (rejoinder, page 7, section 4.17), the appellant has not shown that the reactants, specific catalyst used and process conditions are the same or essentially the same in the examples of the patent in suit and the examples of D5. In fact, no information at all is given about the nature and the amount of comonomer units present in the copolymer of Example 3. D5 does not even describe how the LLDPE of its Example 3 was produced, in particular which specific catalyst was used, and for which the teaching of D5 only provides a general structure in its paragraph [0013]. This was pointed out by the appellant in opposition proceedings against D5 (rejoinder, section 4.26). In the absence of such information, it cannot be concluded that the LLDPEs resulting from the synthesis carried out in Example 3

of D5 and in Example 1 of the patent in suit are necessarily the same.

3.2.4 Regarding the question whether the similarity of properties between the LLDPE of Example 3 of D5 and that of inventive Example 1 of the patent in suit empirically demonstrates that the former necessarily exhibits a CEF fraction from 70 to 90°C of at least 80% of the total CEF fractions, the properties considered by the appellant are those measured with the following parameters: $I_2$, $I_{10}/I_2$, $I_{10}$, density, $M_n$, $M_w$, $M_z$, $M_n$, $M_w/M_n$, $M_z/M_w$, level of unsaturation unit/1.000.000 carbon (total, vinylene, vinyl, vinylidene) and the Zero-Shear Viscosity Ratio (ZSVR).

In this respect, the appellant's assertion that the differences in $I_{10}$, $I_2$ and $I_{10}/I_2$ between the composition of Example 3 in D5 and inventive Example 1 of the patent in suit would be within the measurement error margins (statement of grounds of appeal, page 5, section 4.20) is not supported by any evidence and is therefore to be disregarded as a mere allegation.

In addition, the lower $I_{10}$ and $I_2$ values for the LLDPE of Example 1 of the patent in suit compared to those of the LLDPE of the composition of Example 3 of D5 are consistent with corresponding higher Mn values, while a lower polydispersity value obtained for the composition of Example 1 of the patent in suit, also compared to the composition of Example 3 of D5, is in agreement with a corresponding lower $I_{10}/I_2$ ratio.

Accordingly, both the Mn value and the molecular weight distribution indicated for Example 3 of D5 and Example 1 of the patent in suit demonstrate that the LLDPE in question are different. Furthermore, as pointed out by

the respondent (rejoinder, page 7, section 4.17), the LLDPE of Example 1 of the patent in suit and that of the composition of Example 3 of D5 have different levels of unsaturation, as well as different $M_w$ and $M_z$ values.

The appellant's submission that the alleged similarities between the parametric values mentioned above would also imply a similar distribution of the comonomer, is in the absence of further explanation based at best on the underlying argument that a similarity of these parametric values for Example 3 of D5 and Example 1 of the patent in suit is the result of similar preparation conditions, in particular the catalytic system used, since all these properties are in fact dependent thereon.

However, as shown above, the LLDPE of Example 1 of the patent in suit and that of the composition of Example 3 of D5 for which the preparation conditions are unknown differ at least in their $M_n$, $M_w$ and $M_z$ values, molecular weight distribution and level of unsaturation. Hence, based on that underlying argument, the fact that the values obtained for the $M_n$, $M_w$ and $M_z$, the molecular weigh distribution and the level of unsaturation are different rather indicate that a different comonomer distribution is also to be expected.

3.2.5 Therefore, it cannot be concluded based on the appellant's submissions that D5 requires a comonomer distribution of the LLDPE, which is equivalent to that required in the patent in suit, let alone that the LLDPE of Example 3 of D5 has a ratio of the CEF fraction from 70 to 90°C to the total CEF fractions

which is at least 80%, as required by operative claim 1.

*$I_{10}/I_2$ ratio*

3.3 It follows from the second paragraph of point 3.2.4 above that the $I_{10}/I_2$ ratio defined in operative claim 1 must be considered as an additional distinguishing feature over the closest prior art.

*Conclusion concerning the distinguishing features over the closest prior art*

3.4 In view of the foregoing and in agreement with the finding of the opposition division, the LLDPE composition of claim 1 differs from the closest prior art in that

(i) the $I_{10}/I_2$ ratio is equal to or less than 6.7 and

(ii) the CEF fraction from 70 to 90°C of the total CEF fractions is at least 80%.

*Problem successfully solved*

4. Relying on the experimental results described in the patent in suit (comparison of inventive filament 1 with comparative filaments 1 and 2 in table 7 of the patent), the respondent submits that the effect of the $I_{10}/I_2$ ratio, in combination with the other claimed features, would be the reduction of the shrinkage for the same extrusion line speed without unduly compromising other mechanical properties (reply to the statement of grounds of appeal, page 7, section 4.16).

Moreover, noting that there would be clear differences between the composition of Example 3 of D5 and the inventive composition 1 of the patent in suit with regard to the parametric values of $I_{10}/I_2$, $M_n$, $M_w$ and $M_z$ and total unsaturation, the respondent considers that a comparison of the inventive composition 1 of the patent (inventive filaments 1-4) with the composition of Example 3 of D5 would reinforce the advantageous effects associated with the claimed subject-matter, namely slightly higher tenacity and elongation and lower shrinkage, reference being made to Table 7 of the patent and Table 6 of D5 (reply to the statement of grounds of appeal, sections 4.17 and 4.18).

Noting that the results for the examples in the patent are based on a higher extrusion line speed (140-200 m/min) than the line speed used in D5 (130 m/min), the respondent concludes that the technical problem solved by the subject-matter of claim 1 with respect to the closest prior art would be the provision of a LLDPE that can be operated at higher extrusion line speeds for the production of artificial turf yarn monofilaments, without compromising shrinkage, curl and mechanical performance, tenacity and elongation at break (reply to the statement of grounds of appeal, sections 4.19 and section 4.21).

This is not convincing.

4.1 In the present case, both the patent in suit and the closest prior art are concerned with subject-matters described almost exclusively in terms of parameters. The modifications made vis-à-vis the closest prior art are defined in operative claim 1 by certain ranges of values for two parametric requirements, namely a $I_{10}/I_2$ ratio of at most 6.7 and a ratio of the CEF fraction

from 70 to 90°C to the total CEF fractions of at least 80%, the latter concerning the distribution of the comonomers between the LLDPE chains.

4.1.1 It is common general knowledge that both the distribution of the comonomers between the LLDPE chains and the $I_{10}/I_2$ ratio, which is linked to the polydispersity value, are like other parametric properties, catalyst dependent. Concerning the comonomer distribution, reference is made to the statement of grounds of appeal (section 4.13) and to the rejoinder (section 4.26, page 11, seventh and eighth paragraphs in which the CDC is indicated to depend on the nature of the catalyst).

However, these parameters only define two structural elements of a LLDPE, but not its comprehensive structure, even when the additional parameter defined in operative claim 1, i.e. the melt index $I_2$, is taken into account. As to further structural aspects of LLDPEs, it can be for example referred to the nature of the comonomer, the density, $M_n$, $M_w$ and unsaturation levels (vinylene, trisubstituted, vinyl, vinylidene) (patent in suit, page 13, Table 3 and D5, Tables 1-3).

4.1.2 In the case of products which can be defined in an exhaustive manner solely on the basis of structural characteristics, the existence of a causal link between a technical effect and the structural modification operated can be easily verified. However, in the present case, the existence of a causal relationship between tenacity, elongation and shrinkage of an artificial turf yarn monofilament of a LLDPE obtained by extrusion and the selection of a $I_{10}/I_2$ ratio or a value of the ratio of the CEF fraction from 70 to 90°C to the total CEF fractions for that LLDPE to be

extruded cannot be established on the basis of the comparison offered by the respondent, i.e. a comparison of inventive filament 1 with comparative filaments 1 and 2 in table 7 of the disputed patent.

This is because the parameters used in these experiments are interrelated and their relationship is not fully explained or understood on the basis of the parties' submissions, let alone their degree of interdependence quantitatively established.

In these circumstances, it is not even reasonable to assess separately the contribution to an inventive step of each of the above identified distinguishing features.

4.1.3 In addition, the parameters used to characterise the LLDPE in the examples do not provide a complete structural description of the polymers under consideration, but only some aspects thereof, which also makes it difficult to establish a causal link between the sole parametric values defined for the LLDPE as distinguishing features and any alleged improvement in the properties of the artificial turf yarn monofilament observed with the experimental tests considered.

4.1.4 Hence, the respondent' arguments in respect of the problem solved over the prior art are merely based on correlations made by the parties between the distinguishing parametric features over the closest prior art and certain properties of LLDPE observed in the experimental data relied upon. Moreover, given the limited amount of available experimental data, it is also not possible to empirically infer any causal relationship between said distinguishing parametric

feature(s) and the properties shown in said experimental data.

4.1.5 Under these circumstances, the question as to whether comparative filaments 1 and 2 in table 7 of the disputed patent can be considered to be representative of the teaching of the closest prior art (example 3 of D5) can be left unanswered.

4.2 For the same reasons given in points 4.1.1 to 4.1.4 above, the appellant's argument regarding the experimental results comprised in the patent in suit are also not pertinent.

The fact that the patent in suit reports monofilaments made with the LLDPE of inventive example 1 of the patent in suit (inventive filaments 1 to 4 in Tables 7-9) having mechanical properties comparable to those of the filaments made with the LLDPE of comparative example 1 (comparative filaments 1 and 6 in Tables 7-9), the latter having a ratio of the CEF fraction from 70 to 90°C to the total CEF fractions of 74.5 % which is just below the limit set out in operative claim 1 as the sole difference (statement of grounds of appeal, section 4.26) does not allow to draw any conclusion as to the existence of a causative effect of a CEF fraction from 70 to 90°C of the total CEF fractions being at least 80%.

By the same token, contrary to the appellant's submissions (statement of grounds of appeal, section 4.25), it is not reasonable in the present case to require experimental data where the $I_{10}/I_2$ ratio is the only distinguishing feature, as evidence that the effects alleged by the respondent are indeed brought

about by this distinguishing feature over the closest prior art.

4.3 Finally, the benefits over the closest prior art alleged by the respondent to be achieved by the claimed LLDPE cannot be demonstrated by a direct comparison of the performances of turf yarns produced with inventive composition 1 of the patent in suit ("Inventive Filaments 1-4") and the composition of Example 3 of D5 ("Inv. TY Ex 3" of D5), as submitted by the respondent.

Whereas the respondent does not submit the existence of a causal relationship between the distinguishing features and said alleged benefits, such comparison does not demonstrate these technical benefits in an empirical manner either. This is because this single inventive composition 1 of the patent in suit concerns a specific LLDPE having as comonomer 1-hexene in a certain amount with specific properties in terms of $I_2$, the amount of CEF fraction from 70 to 90 °C, $I_{10}/I_2$, the density (specification, paragraph [0096]), as well as values for $M_n$, $M_w$, $M_z$, the level of unsaturation unit/1.000.000 carbon (total, vinylene, vinyl, vinylidene) and a Zero-Shear Viscosity Ratio (ZSVR) (specification, page 13, Tables 3 to 5) which LLDPE cannot reasonably be considered to be representative of all LLDPE covered by the definition of claim 1.

On that basis, comparing the inventive composition 1 of the patent in suit ("Inventive Filaments 1-4") with "Inv. TY Ex 3" of D5 cannot demonstrate that the claimed LLDPE generally exhibit the alleged technical benefits or improvements over the closest prior art.

4.4 In view of the foregoing and the established jurisprudence that alleged but unsupported advantages

cannot be taken into consideration in respect of the determination of the problem underlying the invention, the problem successfully solved over the closest prior art is therefore to be formulated, in agreement with the opposition division, as the provision of a further LLDPE composition for artificial turf.

*Obviousness of the solution*

5. It remains to be decided whether the skilled person desiring to solve the problem defined in section 4.4, would, in view of the disclosure of D5, possibly in combination with other prior art documents or with common general knowledge, have modified the LLDPE of example 3 of D5 in such a way as to arrive at the LLDPE of operative claim 1.

5.1 It is undisputed that the ratio of a CEF fraction in a given temperature range to all CEF fractions is known to the skilled person to provide information about the comonomer distribution within a LLDPE. It is also uncontested that the $I_{10}/I_2$ ratio is also a relevant parameter for the LLDPE of D5.

According to the case law of the boards of appeal, the answer to the question of what a skilled person would have done in the light of the state of the art depends to a large extent on the technical result sought to be achieved (see T 939/92, Reasons 2.4.2 and 2.5.3).

Faced with the problem of providing a further LLDPE composition for artificial turf, irrespective of whether the extruded filaments obtained with said LLDPE have improved tenacity, elongation and shrinkage, no pointer in D5 to the claimed solution is actually needed in order to arrive at the LLDPE claimed, since

the act of selecting both a $I_{10}/I_2$ ratio within the range defined in operative claim 1, the upper limit of which is moreover close to the value of the LLDPE of the closest prior art, and a comonomer distribution expressed in claim 1 by a CEF fraction from 70 to 90°C of the total CEF fractions of at least 80% is an arbitrary measure.

5.2 However, even if the selection of such parametric definitions is arbitrary, in order to conclude that it was obvious for the skilled person to arrive at the LLDPE of operative claim 1, it must have been shown that the preparation of said LLDPE was also obvious.

Accordingly, the decisive issue in the present case, is whether the person skilled in the art would be able, on the basis of the information provided in D5 or other prior art and, if necessary, using common general knowledge, to identify the measures which would lead to a LLDPE that meets the parametric definition of claim 1, without having to resort to an undue amount of experimental work.

5.2.1 As the respondent pointed out, the appellant has not explained the practical steps the skilled person would specifically take, within the ambit of what is actually disclosed in D5, to achieve a $I_{10}/I_2$ ratio while still meeting the other stipulated polymer properties, including a CEF fraction from 70 to 90°C of the total CEF fractions of at least 80%.

5.2.2 Contrary to the appellant's opinion (statement of grounds of appeal, pages 10 and 11, section 4.41) the respondent's argument that a person skilled in the art would be able, starting from the teaching of the patent in suit and from common general knowledge to control

the parameters defined in operative claim 1, has no bearing on the answer to the question whether it would be obvious starting from the teaching of D5 to arrive at a LLDPE of operative claim 1 in an obvious manner. This is because the skilled person putting into practice the teaching of the patent in suit would benefit from the set of specific instructions given therein which are not disclosed in D5.

5.2.3 While the patent in suit teaches in paragraphs [0096] and [0097] the use of a specific catalytic system, as well as specific process conditions for preparing a LLDPE in accordance with operative claim 1, the teaching of D5 is much broader. Reference is made to paragraph [0012] of D5 defining in a much broader manner the catalytic system. Whereas in order to obtain a LLDPE in accordance with operative claim 1 it is not necessarily required for the skilled person to reproduce example 3 of D5, the skilled person should nevertheless be able to prepare, in view of the overall teaching of D5, other prior art documents or with common general knowledge, the LLDPE of operative claim 1 without having to resort to an undue amount of experimental work.

In this respect, the appellant put forward during the oral proceedings that the $I_{10}/I_2$ ratio and the CEF fraction as defined in operative claim 1 could be controlled by selecting the right catalyst from those described in paragraph [0012] of D5, in particular the ligand, both properties going hand in hand. The appellant, however, did not explain which concrete measures the skilled person would take to select both an appropriate ligand and adapted process conditions, including the selection and amount of comonomer, and in the event the desired result is not obtain how to

modify this set of variables. In other words, the appellant did not explain which methodology the skilled person would adopt in order to obtain with a reasonable amount of experimental work the parametric definition arbitrarily chosen. Moreover, in the absence of any evidence in this respect the argument that the $I_{10}/I_2$ ratio and the CEF fraction as defined in operative claim 1 would go hand in hand is speculative.

5.2.4 The appellant's argument at the oral proceedings that there would be room for meeting the CEF profile defined in operative claim 1 should it not be directly obtained by selecting a catalyst within the formula defined in paragraph [0012] of D5 does not say anything about the amount of experimental work which would be required to do so.

Regarding the appellant's additional argument submitted during the oral proceedings that Figure 12 of D2 would in particular demonstrate that the CEF fraction defined in operative claim 1 could be adjusted by changing the comonomer content, it is noted that the catalyst and process conditions used in D2 to prepare the LLDPE are unknown apart from the type and content of comonomer. Moreover, section 4.1 and Figure 12 of D2 illustrate that at higher comonomer content elution peaks shift to lower temperatures and become broader, as was also submitted by that party in section 4.8 of the statement of grounds of appeal. This means that in the specific cases reported with Figure 12 of D2 the amount of comonomer does not only influence the position of the elution peak, but also its broadness. Whether or not a variation of the amount of comonomer using one of the catalysts described in paragraph [0012] of D5 would allow to obtain an elution peak whose position and broadness matches the definition provided in operative

claim 1, while also meeting the other parametric requirements of that claim, remains in the absence of any evidence unknown.

5.2.5 On that basis, whether the person skilled in the art would be able to identify the measures which would lead to a LLDPE that meets the parametric definition of claim 1, without having to resort to an undue amount of experimental work remains a matter of conjecture.

*Conclusion*

5.3 In view of the foregoing, the invention defined by the subject-matter of operative claim 1 has not been shown to be obvious to a person skilled in the art starting from the teaching of D5. The appellant's objection that the subject-matter of operative claim 1 lacks an inventive step is therefore rejected.

5.4 The appellant submitted that the same arguments as given for claim 1 apply *mutatis mutandis* to claims 6, 12, 13 and 14 (statement of grounds of appeal, section 4.45). Further explanations were not provided in respect of those claims. Accordingly, since the appellant's submissions in relation to claim 1 were not found convincing, the same must hold true in respect of claims 6, 12, 13 and 14.

6. As the sole objection of the appellant against the main request fails, the appeal is to be dismissed

**Order**

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

The appeal is dismissed.

The Registrar: The Chairman:

D. Hampe M. Barrère

Decision electronically authenticated