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Datasheet for the decision of 22 November 2023

Case Number: T 0771/21 - 3.3.03

Application Number: 15715479.0

Publication Number: 3116932

IPC: C08G63/181

Language of the proceedings: EN

Title of invention:
POLYESTER AND METHOD FOR PREPARING SUCH A POLYESTER

Patent Proprietor:
Furanix Technologies B.V.

Opponents:
Purac Biochem B.V.
E. I. du Pont de Nemours and Company

Relevant legal provisions:
EPC Art. 56
RPBA 2020 Art. 12(4), 12(6)

Keyword:
Inventive step - (no: all requests)
Late-filed evidence - circumstances of appeal case justify admittance (yes)

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Beschwerdekammern

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Case Number: T 0771/21 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 22 November 2023

Appellant: (Patent Proprietor)	Furanix Technologies B.V. Zekeringstraat 29 1014 BV Amsterdam (NL)
Representative:	EP&C P.O. Box 3241 2280 GE Rijswijk (NL)
Respondent 1: (Opponent 1)	Purac Biochem B.V. Arkelsedijk 46 4206 AC Gorinchem (NL)
Representative:	De Vries & Metman Overschiestraat 180 1062 XK Amsterdam (NL)
Respondent 2: (Opponent 2)	E. I. du Pont de Nemours and Company 974 Centre Road Wilmington, DE 19805 (US)
Representative:	Mewburn Ellis LLP Aurora Building Counterslip Bristol BS1 6BX (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 9 April 2021 revoking European patent No. 3116932 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	D. Semino
Members:	O. Dury
	A. Bacchin

Summary of Facts and Submissions

I. The appeal of the patent proprietor is against the decision of the opposition division revoking European Patent No. 3 116 932.

II. The following documents were, among others, cited in the decision under appeal:

D2: CN 102050941
D2b: Human English translation of D2
D17: NPTEL 2013: "Polyesters" from the online course from NPTEL available from 17 September 2013, accessible on: https://nptel.ac. in/courses/116102010/38, 14 pages (version of D17 filed by opponent 2 with their notice of opposition)
D33: Declaration by Dr. Hari Sunkara dated 19 February 2020
D35: Declaration by Dr. Ulrich Thiele filed by opponent 1 with letter of 20 February 2020

III. The decision under appeal was based on the main request filed with letter of 19 January 2021 and on fourteen auxiliary requests. As far as relevant to the present case, the following conclusions were reached in that decision:

- The opponents had no novelty objections against claim 6 of the main request.

- The subject-matter of claim 6 of the main request did not involve an inventive step when document D2 was taken as the document constituting the closest

prior art.

- While none of the first to the thirteenth auxiliary requests met the requirements of the EPC, the fourteenth auxiliary request was not admitted into the proceedings.

In view of the above, the patent was revoked.

IV. The patent proprietor (appellant) appealed against the above decision and, together with their statement of grounds of appeal, filed three sets of claims as main request, first auxiliary request and second auxiliary request. Also, the following document was filed:

D41: Report "Further experimental data"

V. Opponents 1 and 2 (respondents 1 and 2) both submitted a rejoinder to the statement of grounds of appeal.

VI. The parties were summoned to oral proceedings and a communication pursuant to Article 15(1) RPBA indicating specific issues to be discussed at the oral proceedings was sent to the parties.

VII. Oral proceedings were held on 22 November 2023 in the presence of the appellant and of respondent 2. Respondent 1 did not attend, as announced by letter of 13 April 2023.

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

(a) The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request filed during opposition and re-filed with the statement

of grounds of appeal or any of the first or second auxiliary requests filed with the statement of grounds of appeal.

(b) Respondents 1 and 2 requested that the appeal be dismissed (respondent 1's request having been made in writing).

IX. Claim 6 of the **main request**, which is the sole claim relevant for the present decision, read as follows:

"6. Method for the preparation of a polyester, wherein a starting mixture comprising 2,5-furandicarboxylic acid and ethylene glycol is subjected to esterification to form an ester composition, which ester composition thus obtained is subjected to polycondensation at reduced pressure in the presence of a polycondensation catalyst to obtain a polycondensate, wherein the esterification takes place in the presence of a basic compound and/or an ammonium compound capable of suppressing the formation of diethylene glycol."

X. Both claim 5 of the **first auxiliary request** and claim 1 of the **second auxiliary request** were identical to claim 6 of the main request.

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

(a) D41 should be admitted into the proceedings.

(b) The subject-matter of claim 6 of the main request involved an inventive step when document D2 was taken as the closest prior art. The combination of D2 with D17, which was relied upon by the

opposition division and the respondents, was based on hindsight, which was not allowable.

(c) Since claim 5 of the first auxiliary request and claim 1 of the second auxiliary request were identical to claim 6 of the main request, the same conclusion regarding inventive step was bound to be reached for these three claims.

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

(a) D41 should be not admitted into the proceedings.

(b) The subject-matter of claim 1 of the main request did not involve an inventive step when document D2 was taken as the closest prior art and taking into account the disclosure of document D17.

(c) Since claim 5 of the first auxiliary request and claim 1 of the second auxiliary request were identical to claim 6 of the main request, the same conclusion regarding inventive step was bound to be reached for these three claims.

Reasons for the Decision

1. Admittance of D41

1.1 Both respondents requested that D41, which was filed with the statement of grounds of appeal, be not admitted into the proceedings because it was late filed

and it was *prima facie* not relevant.

1.2 In that respect, the filing of D41 and of the submissions based thereon with the statement of grounds of appeal constitutes an amendment to the patent proprietor's case (Article 12(2) and (4) RPBA), the admittance of which undergoes the stipulations of Article 12(4) to (6) RPBA.

1.3 At the oral proceedings before the Board, the appellant put forward that according to Article 12(1)(b) and (c) RPBA, the appeal proceedings shall be based on the notice of appeal, the statement(s) of grounds of appeal and the rejoinder(s) thereto. Therefore, it was questionable if a document such as D41, which had been submitted with the statement of grounds of appeal, could be excluded from the proceedings.

However, should the appellant's reading of Article 12(1) RPBA be correct, the provisions of Article 12(4) or 12(6) RPBA, which provide criteria for the Board's exercise of discretion to admit e.g. documents filed for the first time with the statement of grounds of appeal, would be superfluous. Also, it makes no doubt that the appellant's view is not in line with established case law regarding new submissions on appeal (Case Law of the Boards of Appeal of the EPO, 10th edition, 2022, V.A.4.1.1.b and V.A.4.2.1) with which the Board is in full agreement. For these reasons, the appellant's argument is rejected and it has to be decided whether document D41 is to be admitted into the proceedings.

1.4 In that regard, it is derivable from the appellant's submissions that the document was filed in support of the line of defence regarding inventive step of the

main request in view of D2 as the closest prior art, in particular regarding the achievement of a surprising effect, namely higher melting temperature (statement of grounds of appeal: pages 4-5, point 2.4, in particular page 5, lines 1-2; page 7, point 3.2). In that respect, since all parties and the opposition division read the content of D2, which is in Chinese, on the basis of its English translations D2b, the passages of D2 indicated in the following make reference to the corresponding passages of D2b.

1.4.1 It is further derivable from the file history that D2 was filed at the outset of the opposition proceedings and was held to be relevant regarding novelty of the granted claims (notice of opposition of opponent 2: point 2.2). Further objections of lack of novelty over D2 and of lack of inventive step starting from D2 as the closest prior art were then raised by opponent 2 in reaction to the first preliminary opinion of the opposition division dated 24 October 2019 (opponent 2's letter of 20 February 2020: points 4.1, 5.1 and 5.2). These objections were further pursued in reaction to the second preliminary opinion of the opposition division dated 8 July 2020 (opponent 2's letter of 15 December 2020: point 3.2; opponent 2's letter of 11 February 2021: point 2; opponent 1's letter of 16 December 2020: bottom of page 2 to top of page 6). Therefore, D2 was a relevant document already during the opposition proceedings.

1.4.2 However, it was not contested by the respondents that, as indicated in the Board's communication (section 4.3.3.b), at no time during the written proceedings the opposition division provided a preliminary opinion regarding the opponents' novelty and inventive step objections based on D2. In addition,

the preliminary considerations of the opposition division regarding novelty and inventive step provided in both preliminary opinions were in favour of the patent proprietor, i.e. novelty and inventive step were acknowledged. Under these circumstances, the patent proprietor was confronted for the first time with a negative opinion of the opposition division regarding inventive step starting from D2 as the closest prior art at the oral proceedings held on 16 February 2021.

It is further noted that the decision of the opposition division that the subject-matter of the claims of the main request did not involve an inventive step in view of D2 as the closest prior art is based on the experimental data contained in document D40 (reasons: point 21.2.1), which was filed by opponent 1 at a late stage of the opposition proceedings, namely two months before the oral proceedings before the opposition division. Therefore, the patent proprietor had little time to react to the filing (and admittance) of D40, whereby the data provided therein were considered by the opposition division to determine the disclosure of the prior art D2 (reasons: page 6, first and second paragraphs; points 21.2.1 and 21.2.2).

For these reasons, it cannot be concluded that D41 should not be admitted because it should have been filed already during the opposition proceedings (Article 12(6) RPBA).

1.4.3 Also, it is noted that the appellant is pursuing with D41 a line of argumentation which was already put forward during the opposition proceedings (improved melting point: see patent proprietor's letter of 19 January 2021, page 2, third paragraph; see also minutes of the oral proceedings: page 9, second and

fifth full paragraphs) and which concerns a property mentioned in the patent in suit (paragraph 11; end of paragraph 30). Therefore the data provided with D41 is merely a legitimate development of arguments already on file. In addition, D41 was filed with the aim to address the issue of inventive step which was dealt with in the decision under appeal (Article 12(4) RPBA).

1.4.4 The question whether or not the information provided in D41 effectively supports the arguments of the appellant and/or is convincing (respondent 2's rejoinder: page 2, first four paragraphs) is rather related to the analysis of the probative value of D41 than to its admittance. This view, which was mentioned in the Board's communication (section 4.3.3.e), was contested by respondent 2 during the oral proceedings before the Board.

a) Respondent 2 argued that, according to Article 12(4), last sentence, RPBA, the Board shall exercise its discretion in view of the suitability of the amendment to address the issues which led to the decision under appeal. Therefore, at least some analysis of the content of D41 should be made when the Board exercised its discretion to admit that document into the proceedings, so respondent 2. In the present case, D41 did not provide sufficient information in order to repeat the experiments disclosed therein (in particular no precise indication was given regarding the nature of the catalyst used). In addition, it was not even stated in D41 if any of the reworks done therein was effectively illustrative of the subject-matter being claimed. Also, the comparison of various examples disclosed in table 7 of D41 was not suitable to conclude that any technical effect was achieved which could be attributed to the feature effectively

distinguishing the subject-matter being claimed from the disclosure of the closest prior art. For these reasons, D41 was not suitable to address the issue of inventive step over D2 as the closest prior art dealt with in the decision under appeal and should, for that reason, be not admitted.

b) However the Board finds that these considerations properly pertain to an assessment of document D41 on the merits and are based on a comparison of the disclosure of D41 with the relevant part of the disclosure of D2 that constitutes the closest prior art. Such a detailed analysis of the probatory value of D41 goes beyond what is required at the stage of deciding on its admittance. In the present case, the Board is satisfied that, for the reasons already indicated in sections 1.4.2 and 1.4.3 above, the circumstances of the present case justify the filing of D41 with the statement of grounds of appeal.

The Board is further satisfied that a *prima facie* analysis of D41 confirms the declaration of the appellant (statement of grounds of appeal: paragraph bridging pages 4 and 5) that said document at first sight contains in sections 4 and 5 thereof some experimental data that - independently of their probative value - were filed by the appellant with the intention to substantiate statements made in the patent in suit/application as filed regarding advantageous effects related to the use of diethylene glycol (DEG) suppressants in a process as defined in claim 6 of the main request and/or improved properties of polyesters as defined in claim 1 of the main request (which is directed to polyesters comprising ethylene 2,5-furandicarboxylate units characterised by specific amounts of both DEG residues (in absolute terms) and

carboxylic acid end groups (both in absolute and relative terms). Therefore, already for that reason, D41 suitably addresses the issue of inventive step which led to the decision under appeal, as is stipulated in the last sentence of Article 12(4) RPBA.

For these reasons, respondent 2's arguments did not convince.

1.5 In view of the above, the circumstances of the present case justify that the Board made use of its discretion to admit into the proceedings document D41 and the submissions based thereon (Article 12(4) and 12(6) RPBA).

Main request

2. It was undisputed that the operative main request filed with the statement of grounds of appeal is identical to the main request filed with letter of 19 January 2021 that was dealt with in the decision under appeal. In that regard, the conclusion of the opposition division that claim 6 of that main request did not involve an inventive step when document D2 was taken as the closest prior art was still in dispute between the parties during the appeal proceedings. Considering that the Board arrived at the conclusion that it was not justified that said decision of the opposition division be overturned for the reasons indicated below and that a claim with the wording of claim 6 of the main request was present in all requests on file, there is no need to address any other issues than inventive step of claim 6 of the main request in the present decision.

3. Claim 6 - Inventive step

3.1 Closest prior art - Distinguishing feature(s)

The following points were not in dispute between the parties and are further adhered to by the Board:

- D2 is a suitable document to be taken as the closest prior art, whereby examples 1 and 3 thereof are particularly relevant and constitute an appropriate starting point for the analysis of the inventive step.

- The method according to claim 6 of the main request differs from the one according to examples 1 and 3 of D2 only in that it requires that "the esterification takes place in the presence of a basic compound and/or an ammonium compound capable of suppressing the formation of diethylene glycol" (whereas the use of a DEG suppressant is not disclosed in D2).

3.2 Technical problem solved over the closest prior art

3.2.1 At the oral proceedings before the Board, the appellant argued that the technical problem solved over the closest prior art resided in the provision of a method for preparing a polyester comprising ethylene 2,5-furandicarboxylate units having a higher melting point (see also statement of grounds of appeal: paragraph bridging pages 4 and 5 and section 3.2).

Appellant's arguments based on D41 not convincing

3.2.2 In their statement of grounds of appeal, the appellant put forward that the experimental data of D41 showed that the use of DEG suppressants in a method of preparation of polyesters according to operative

claim 6 led to polyesters with higher melting points (statement of grounds of appeal: paragraph bridging pages 4 and 5; see also section 3.2). However, respondent 2 argued that D41 did not provide sufficient experimental details to allow reproduction of the experiments. Therefore, it was not possible to assess the probative value of D41, nor to independently verify the results contained therein (rejoinder: page 2, second and third paragraphs). In addition, no advantages over the polymers of D2 were shown in D41, so respondent 2 (rejoinder: page 2, first paragraph).

a) In that respect, it was indicated in the Board's communication that the Board shared at least some of the respondents' concerns for the following reasons (Board's communication: section 7.3.3):

- "It is established case law that to be of relevance in demonstrating that a technical improvement is achieved in comparison with the closest state of the art, any comparative test presented must be reproducible on the basis of the information thus provided, thereby rendering the results of such tests directly verifiable (see Case Law, *supra*, I.D.4.3.2, fourth paragraph). In view of the lack of information in D41 regarding the nature of the catalysts used and the experimental conditions applied, it does not appear that these conditions are satisfied.

- It does not appear that the polyesters prepared in D41 are according to the teaching of D2 (see e.g. claim 1, requiring a titanium compound and a phosphorous compound satisfying a specific ratio; it further does not seem that it can be derived from D41 if the polyesters prepared therein satisfy

the requirement in terms of viscosity indicated in paragraph 41 of D2, which is satisfied in examples 1 and 3 of D2) and can, therefore, allow a fair comparison with the closest prior art."

However, no counterarguments were put forward by the appellant to address these concerns, either in writing (letter of 12 October 2023) or at the oral proceedings before the Board. Under these circumstances, there is no reason for the Board to deviate from its preliminary conclusion that D41 cannot support the line of arguments of the appellant according to which the data of D41 showed that the use of DEG suppressants in a method according to operative claim 6 led to polyesters with higher melting points (Board's communication: section 7.3.3, last paragraph).

Alleged effect credible in view of the teaching of D17

3.2.3 However, in view of the parties' submissions regarding the obviousness of the solution, the improvement in melting point relied upon by the appellant is nevertheless credibly achieved by using DEG suppressants in the method as defined in claim 6 of the main request for the following reasons:

It was undisputed between the parties that D17 teaches that polyethylene terephthalate polymers (PET, which is a polyester) comprising a reduced amount of diethylene glycol residues can be prepared from ethylene glycol and terephthalic acid using DEG suppressants, i.e. a strong base, such as sodium hydroxide or an organic quaternary hydroxide (which correspond to a basic compound and/or and ammonium compound as defined in operative claim 6). It was further common ground that D17 also discloses that such DEG suppressants lead to

an increase of the melting point of the PET thus prepared (D17: pages 3 and 4, section b) "TPA Route: Direct Esterification Reaction", two paragraphs below reaction scheme 39; see also page 9, first and third paragraphs below scheme 44). During the proceedings, the main point in dispute between the parties was whether the positive effects of DEG suppressants disclosed in D17, which is solely directed to the preparation of PET, could also be taken into account for polyesters prepared according to the method of claim 6, such as poly(ethylene-2,5-furandicarboxylate) (PEF).

a) In that regard, both PET and PEF belong to the same category of polymers, namely polyesters, and can be prepared using a very similar reaction process, namely an esterification between a dicarboxylic acid and a diol (PET: D17, page 3, section b); PEF: operative claim 6). In addition, in both cases, the same side reaction is involved, whereby diethylene glycol is formed from ethylene glycol (PET: D17, reaction scheme 39 on page 4; PEF: D35, section 2). In view of this, the reaction processes of PET and PEF have strong similarities, as even acknowledged by the appellant (statement of grounds of appeal: page 9, second full paragraph). Nevertheless, while PET and PEF are prepared using the same diol (ethylene glycol), different dicarboxylic acids are used, which belong to different classes of chemical compounds (while terephthalic acid contains a C6-aromatic ring, 2,5-furandicarboxylic acid contains a 5-atoms heterocyclic ring). Under these circumstances, it may be agreed with the appellant that the skilled person might expect that this difference would be related to different chemical properties and reactivities of these diacids (statement of grounds of appeal: page 9, second

full paragraph; letter of 12 October 2023: page 4, section "Hindsight", first paragraph). However, there is no evidence on file that both esterification reaction processes would, in view of that difference, proceed in a significantly different manner. In particular, the statements of the appellant that that difference would be of importance (statement of grounds of appeal: page 9, second full paragraph; letter of 12 October 2023: page 4, first full paragraph) is not supported by any facts. Also, there is no evidence that the effect of DEG suppressants which is known to occur by the preparation of PET would be significantly affected when preparing a polyester as defined in operative claim 6 such as PEF. To the contrary, as pointed out by respondent 2 (rejoinder: page 5, second paragraph), two technical experts stated that this would not be the case (D33: see e.g. point 2.6, which was referred to by the appellant at the oral proceedings before the Board; D35), whereby it is in particular stated in D35 that i) the skilled person would expect that terephthalic acid and 2,5-furandicarboxylic acid would, despite their different chemical properties, behave in an analogous manner during polymerisation with ethylene glycol (D35: section 6) and ii) the side reaction leading to the formation of DEG in linear polyesters based on ethylene glycol and a dicarboxylic acid would be expected to be as relevant by the manufacture of PEF as by the manufacture of PET (D35: section 2). For these reasons, the Board is satisfied that, in view of the evidence on file (in particular D17, D33 and D35), the skilled person would expect that the teaching of D17 regarding the use of DEG suppressants by the preparation of polyethylene terephthalate would also be valid for polyesters defined according to claim 6, such as poly(ethylene-2,5-furandicarboxylate) (PEF).

b) In that regard, no evidence was filed by the appellant to refute the same conclusion that was already drawn by the opposition division (reasons: page 8, section 21.4, fourth and fifth paragraphs), albeit in the discussion of obviousness.

c) At the oral proceedings before the Board, the appellant argued that it was not derivable from D33 (point 2.6) that the effect of DEG suppressants by the preparation of PET would mandatorily be also obtained by the preparation of PEF. It was rather merely stated therein that this effect "could" also occur, so the appellant.

However, point 2.6 of D33 reads as follows: "I believe that the Opposition Division's position does not properly reflect practice in the field at the time. Workers in the field at March 2014 would have expected that the introduction of basic/ammonium compounds to suppress DEG formation could be successfully applied to 2,5-PEF.". In view of the last sentence of that passage of D33, the Board considers that declaration D33 also confirms that the skilled person would expect that the positive effect of DEG suppressants would also be obtained when preparing a polyester according to claim 6 of the main request. In the absence of any evidence to the contrary, the Board further considers that that statement, together with the passages of the declaration D35 mentioned in section 3.2.3.a above and taking into account the similarities in the reaction processes involved by the manufacture of PET and PEF, means that the positive effect of DEG suppressants by the preparation of PET would be expected to also occur by the preparation of PEF.

d) The appellant put forward that the teaching of D17 regarding the positive effect of DEG suppressants for PET would not be taken into account for a method for the preparation of polyesters according to operative claim 6 because D17 contained no information on how the addition of basic compounds and/or an ammonium compound would influence other properties of the polyester comprising ethylene 2,5-furandicarboxylate units such as the absolute and relative carboxylic acid end group content (letter of 12 October 2023: page 5, first paragraph).

However, since these features are neither reflected in operative claim 6, nor in the formulation of the problem to be solved proposed by the appellant, that argument is not persuasive.

e) For these reasons, it is concluded that the teaching of D17 regarding the positive effect of DEG suppressants on the melting point of PET is also credible for the polyesters prepared by a method according to operative claim 6.

Argument based on examples of the patent in suit not convincing

3.2.4 In the decision under appeal, the opposition division considered that examples 1 and 5 of the patent in suit showed that the objective technical problem was to provide a method for the preparation of a polyester comprising ethylene 2,5-furandicarboxylate units having a reduced level of diethylene glycol (reasons: section 21.4, third paragraph). This view was further shared by respondent 1 (rejoinder: page 8, penultimate paragraph).

However, according to established case law, the problem solved over the closest prior art should be formulated in such a way that it contains no pointer to the solution (Case Law, *supra*, I.D.4.2.1). In the present case, considering that the reduction of the formation of diethylene glycol is present in the distinguishing feature of operative claim 6, that feature is part of the solution of the problem and should, therefore, not be taken up in the formulation of the problem to be solved. Therefore, the formulation of the problem solved contemplated by the opposition division and respondent 1 is not appropriate.

3.2.5 In view of the above, the technical problem solved over the closest prior art resides in the provision of a method for preparing a polyester comprising ethylene 2,5-furandicarboxylate units having a higher melting point.

3.3 Obviousness

3.3.1 The question remains to be answered if the skilled person, desiring to solve the problem defined in above section 3.2.5, 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.

3.3.2 In that regard, the Board considers that it is derivable from paragraph 12 of D2 that low amounts of DEG residues were indicated therein to lead to improve heat resistance.

a) The appellant was of the opinion that such a reading

of paragraph 12 of D2 was not correct and in particular involved hindsight (statement of grounds of appeal: paragraph bridging pages 6 and 7; page 7, last paragraph of section 3.1; sections 3.3 and 3.4).

However, paragraph 12 of D2 reads as follows:

"The high molecular polymer of the present invention further comprises diethylene glycol DEG, which has a content of 0≤DEG≤3.0 wt%; the high content of DEG (diethylene glycol) affects the heat resistance and light resistance of PET, and thus the content of DEG preferably falls within the above range."

Analysing this wording in an objective manner, the Board considers that it is clear from the first sentence of paragraph 12 of D2 that said paragraph concerns polyesters as taught in D2. This is further confirmed by the fact that the same range is the object of claim 3 of D2. In addition, the indication in said paragraph 12 that "the high content of DEG (diethylene glycol) affects the heat resistance ... of PET, and thus the content of DEG preferably falls within the above range" would be understood by the skilled person, in particular if she/he is aiming at increasing the melting point, to limit the amount of diethylene glycol as far as possible.

b) The appellant argued that the subject-matter of claim 1 of the main request involved an inventive step because the skilled person had no motivation to work in the lower end of the range of diethylene glycol residues indicated in D2 (statement of grounds of appeal: page 8, third paragraph; page 9, first and second full paragraphs).

However, since the Board is of the opinion that paragraph 12 of D2 provides a hint to limit the amount of diethylene glycol residues as far as possible, that argument cannot succeed.

c) In addition, it was not contested by the appellant, in particular at the oral proceedings before the Board, that the teaching of paragraph 12 of D2 related to improved heat resistance would be relevant for the skilled person aiming at providing polyesters with increased melting point. Also the Board has no reason to be of a different view (see e.g. D17: page 9, last paragraph above section (ii)).

d) In view of the above, it is concluded that D2 already teaches to decrease the amount of DEG residues in order to increase the melting point of polyesters taught therein, such as PEF.

3.3.3 In addition, it was outlined in section 3.2.2 above that the Board came to the conclusion that the teaching of D17 regarding the effect of DEG suppressants (as defined in operative claim 6) to increase the melting point of PET was also valid for polyesters prepared according to the method of operative claim 6 such as PEF. That conclusion was in particular decisive to consider that it was credible that the technical problem proposed by the appellant was effectively solved. Therefore, for the same reasons, it can only be concluded that the same teaching of D17 shows that the skilled person would know that DEG suppressant as taught in D17 (i.e. a strong base, such as sodium hydroxide or an organic quaternary hydroxide, which correspond to a basic compound and/or and ammonium compound as defined in operative claim 6) may suitably be used to decrease the amount of DEG residues by the

preparation of polyesters as defined in claim 6 of the main request, such as PEF, thereby increasing their melting point. In other words, the teaching of D17 renders the subject-matter of operative claim 6 obvious for the same reasons as the ones indicated in section 3.2.2 above.

3.4 In view of the above, the subject-matter of claim 6 of the main request does not involve an inventive step when document D2 is taken as the closest prior art and the main request, as a whole, is not allowable.

First and second auxiliary requests

4. As confirmed by the parties at the oral proceedings before the Board, claim 5 of the first auxiliary request and claim 1 of the second auxiliary request were identical to claim 6 of the main request.

Under these circumstances, claim 5 of the first auxiliary request and claim 1 of the second auxiliary request are bound to share the same fate as claim 6 of the main request regarding inventive step. For these reasons, the first and the second auxiliary requests are not allowable for the same reasons as the main request.

5. Considering that the first and second auxiliary requests are not allowable without the need of any further analysis, there is no need to address the question of their admittance into the proceedings, which was disputed by the respondents (rejoinder of respondent 1: page 1 to top of page 2; rejoinder of respondent 2: section C.1).

6. Since none of the appellant's requests is allowable, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Hampe D. Semino

Decision electronically authenticated