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Datasheet for the decision of 11 April 2024

Case Number: T 1598/21 - 3.3.03

Application Number: 11717092.8

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Language of the proceedings: EN

Title of invention:
ULTRA-HIGH IV POLYESTER FOR EXTRUSION BLOW MOLDING AND METHOD FOR ITS PRODUCTION

Patent Proprietor:
Dak Americas LLC

Opponent:
Polymetrix AG

Relevant legal provisions:
EPC Art. 54
RPBA 2020 Art. 11

Keyword:
Novelty - product claim with process features - all requests (no)
Remittal - (no)

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Case Number: T 1598/21 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 11 April 2024

Appellant: (Opponent)	Polymetrix AG Sandackerstrasse 24 9245 Oberbüren (CH)
Representative:	Hepp Wenger Ryffel AG Friedtalweg 5 9500 Wil (CH)
Respondent: (Patent Proprietor)	Dak Americas LLC 5925 Carnegie Boulevard Suite 500 Charlotte, NC 28209 (US)
Representative:	Tostmann, Holger Carl Wallinger Ricker Schlotter Tostmann Patent- und Rechtsanwälte Partnerschaft mbB Zweibrückenstrasse 5-7 80331 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 27 July 2021 rejecting the opposition filed against European patent No. 2558514 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	D. Semino
Members:	M. Barrère
	L. Basterreix

Summary of Facts and Submissions

I. The appeal of the opponent lies from the decision of the opposition division rejecting the opposition against European patent No. 2 558 514.

II. The following documents were *inter alia* cited in the decision of the opposition division:

D5: US 3,544,525
D6: EP 0 822 214 A2
D19: Declaration by Peter S. Kezios dated 21 November 2012

III. In that decision the opposition division held, among others, that:

- The subject-matter of granted claim 9 was novel in view of document D5.

IV. The opponent (appellant) filed an appeal against said decision.

V. With the rejoinder to the statement of grounds of appeal, the patent proprietor (respondent) filed twelve sets of claims as auxiliary requests 1, 2, 2a, 3, 3a, 4, 4a, 5, 5a, 6, 6a and 7.

VI. The parties were summoned to oral proceedings and a communication under Article 15(1) RPBA was subsequently issued, setting out the preliminary views of the Board on the issues relevant to the present case. In particular the Board indicated that the subject-matter of the product claims of the main request and of the auxiliary requests did not appear to be novel in view of document D5.

VII. With letter dated 11 March 2024, the respondent indicated that they would not attend the oral proceedings and would not be represented thereat.

VIII. Thereafter the oral proceedings were cancelled.

IX. The requests of the parties were as follows:

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

(b) The respondent requested dismissal of the appeal and maintenance of the patent as granted. Should the Board find that the granted claims do not comply with the requirements of the EPC, the respondent requested that the case be remitted to the opposition division. In addition, the respondent requested maintenance of the patent in amended form on the basis of one of auxiliary requests 1, 2, 2a, 3, 3a, 4, 4a, 5, 5a, 6, 6a and 7 filed with the rejoinder to the statement of grounds of appeal.

X. Claims 1 and 9 of the main request (patent as granted) read as follows:

"1. A method for producing an ultra-high intrinsic viscosity (IV) polyester resin having a final IV (IV_f) of at least 0.9 dL/g, comprising:

solid-state polymerizing a polyester starting material having a starting IV (IV_{st}) meeting the following relationship:

$$0.65 \text{ dL/g} < IV_{st} < 0.9 \text{ dL/g};$$

wherein the polyester starting material is a polyethylene terephthalate polymer, optionally containing one or more comonomers in amounts up to 30 mol%, wherein the polyester starting material has been prepared by melt polymerization up to the IV_{st} with no more than 0.05 dL/g of IV lift due to solid-state polymerization, and wherein the polyester starting material is in solid form as a resin particle having been subjected to latent heat crystallization upon formation of the resin particle, and having a variation of IV of no more than 0.05 dL/g across any dimension of the resin particle, wherein the IV is measured according to the method given in the description."

"9. An ultra-high IV polyester resin prepared by the method of claim 1."

Claim 1 of auxiliary request 1 differed from claim 1 of the main request in that the presence of one or more comonomers was no longer optional (deletion of "optionally" in granted claim 1).

Claim 1 of auxiliary request 2 differed from claim 1 of the main request in that a starting IV (IV_{st}) was "of from **0.72** dL/g to less than 0.9 dL/g" (amendment in **bold**, deletion in ~~strikethrough~~, here and in what follows).

Claim 1 of auxiliary request 3 differed from claim 1 of the main request in that a starting IV (IV_{st}) was "of from **0.72** dL/g to less than **0.82** dL/g".

Claim 1 of auxiliary request 4 corresponded to claim 1 of the main request further limited by the passage:

> "wherein the average SSP IV lift rate is 0.021 dL/g/hr or higher".

Claim 1 of auxiliary request 5 corresponded to claim 1 of the main request further limited by the passage:

> "wherein the polyester starting material has not been previously subjected to external heating crystallization".

Claim 1 of auxiliary request 6 corresponded to claim 1 of the main request further limited by the passage:

> "wherein the starting material resin of 0.65 to 0.90 IV has been crystallized directly from the melt by the method of underwater pelletization and latent heat crystallization".

Claim 1 according to auxiliary requests 2a to 6a differed from claim 1 according to auxiliary requests 2 to 6 respectively in that the presence of one or more comonomers was no longer optional (deletion of "optionally").

Claim 1 of auxiliary request 7 read as follows:

> "1. A method for producing an ultra-high intrinsic viscosity (IV) polyester resin having a final IV (IV_f) of at least 0.9 dL/g, comprising:

solid-state polymerizing a polyester starting material having a starting IV (IV_{st}) meeting the following relationship:

$$0.\cancel{65}\mathbf{72}\ dL/g < IV_{st} < 0.9\ dL/g;$$

wherein the polyester starting material is a polyethylene terephthalate polymer, ~~optionally~~ containing one or more comonomers in amounts up to 30 mol%,
wherein the one or more comonomers are selected from the group consisting of diethylene glycol (DEG), cyclohexene dimethanol (CHDM), 1,3-propane diol, isophthalic acid (IPA),
wherein the polyester starting material has been prepared by melt polymerization up to the IV_{st} with no more than 0.05 dL/g of IV lift due to solid-state polymerization,
and wherein the polyester starting material is in solid form as a resin particle having been subjected to latent heat crystallization upon formation of the resin particle, and having a variation of IV of no more than 0.05 dL/g across any dimension of the resin particle, wherein the IV is measured according to the method given in the description."

The wording of claim 9 of auxiliary requests 1, 2, 2a, 3, 3a, 4, 4a, 5, 5a, 6 and 6a and of claim 8 of auxiliary request 7 was identical to that of granted claim 9.

The remaining claims of these requests are not relevant to this decision.

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

(a) Main request (patent as granted)

(i) Novelty

The subject-matter of granted claim 9 was not novel over example 10 of document D5.

(b) Auxiliary requests 1, 2, 2a, 3, 3a, 4, 4a, 5, 5a, 6, 6a and 7

(i) Novelty

The subject-matter of claim 9 of auxiliary requests 1, 2, 2a, 3, 3a, 4, 4a, 5, 5a, 6 and 6a and of claim 8 of auxiliary request 7 was not novel over example 10 of document D5.

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

(a) Main request (patent as granted)

(i) Novelty

The subject-matter of granted claim 9 was novel over example 10 of document D5.

(ii) Remittal

In the event that the main request is not allowable, the case should be remitted to the opposition division.

(b) Auxiliary requests 1, 2, 2a, 3, 3a, 4, 4a, 5, 5a, 6, 6a and 7

(i) Novelty

The subject-matter of claim 9 of auxiliary requests 1, 2, 2a, 3, 3a, 4, 4a, 5, 5a, 6 and 6a and of claim 8 of auxiliary request 7 was novel over example 10 of document D5.

Reasons for the Decision

1. Procedural aspects

1.1 The appellant requested oral proceedings if the Board did not issue a decision revoking the opposed patent (statement of grounds of appeal, page 1, third paragraph). The respondent also requested oral proceedings in the event that the Board did not issue a decision dismissing the appeal (rejoinder to the statement of grounds of appeal, page 2, second paragraph). However, with letter dated 11 March 2024, the respondent informed the Board that they would not attend the oral proceedings which the Board interprets as a withdrawal of the request for oral proceedings (Case Law of the Boards of Appeal, 10th edition 2022, in the following "Case Law", III.C.4.3.2).

1.2 The respondent's right to be heard is respected, since they had the opportunity to take position on all the issues on which this decision is based. In fact, the following conclusions were communicated to the parties well in advance of the date scheduled to hold oral proceedings (see Board's communication under Article 15(1) RPBA). Considering that no counter-arguments were put forward in reaction to that communication, there is no reason for the Board to deviate from the views expressed therein.

1.3 As the Board is in the position to allow the appeal and to revoke the patent, the decision can be taken in writing and the oral proceedings were cancelled, as not deemed necessary.

Main request (patent as granted)

2. Novelty in view of document D5

2.1 According to the appellant the subject-matter of granted claim 9 is not novel over example 10 of document D5 (statement of grounds of appeal, pages 3 to 10, point 2.; letter dated 23 May 2022, pages 3 to 10, point 1.1). The appellant's arguments may be summarised as follows:

(a) Claim 9 is a product-by-process claim. A product could not be considered as novel merely because the process to prepare it is novel.

(b) The patent proprietor did not provide comparative examples corresponding to the disclosure of D5.

(c) The examples of the opposed patent are not suitable to show an effect of the process on the properties of the polyester resin and it would not be allowable to rely on additional experimental data submitted after the filing date of the patent (such as D19) in order to overcome an objection of lack of novelty.

(d) Even if the experimental data of D19 were taken into account, they would not be suitable to show that the polyester resins of D5 technically differ from a polyester resin prepared by the method of granted claim 1. In particular, example 12 of D19 would not be representative of the polyester resins of the prior art.

2.2 In agreement with the opposition division, the respondent considers that:

(a) Examples 12 and 13 of the opposed patent provide evidence that at least the step of latent heat crystallisation has an effect on the structure and morphology of the final polyethylene terephthalate (PET) in terms of IV gradient across the polyester particles, IV lift rate and the final percentage of crystallisation.

(b) As D5 does not disclose a combination of latent heat crystallisation with a final IV of at least 0.9 dL/g, this document is not novelty-destroying for the subject-matter of claim 9.

2.3 Claim 9 of the opposed patent is directed to an ultra-high IV polyester resin <u>prepared by the method of claim 1</u> (emphasis here and below added by the Board).

The critical question to acknowledge or deny novelty is whether the process of claim 1 has an effect on the properties of the polyester resins derived therefrom that could distinguish them from the resins disclosed in D5.

2.4 According to established case law (Case Law, I.C. 5.2.7), a process feature in a product-by-process claim only contributes to the novelty of a product claim insofar as it gives rise to a distinct and identifiable characteristic of the product. Moreover, if a chemical product is not defined by structural characteristics but only by its method of manufacture, novelty can be established if evidence is provided that modification of the process parameters results in other products. It is sufficient for this purpose to show that distinct differences exist in the properties of the products (Case Law, II.A.7.2).

In that respect, the Board has no reason to consider that the parties to the proceedings may not rely on additional experimental evidence to support their case, as alleged by the appellant. Indeed, it is common practice for parties to proceedings before the EPO to rely on experiments carried out after the filing date of the patent to show, for example, that a parameter not explicitly mentioned in a prior art document results inevitably from a disclosure in said document (implicit feature). By the same token, there are no apparent reasons why a patent proprietor should be denied the possibility to show by means of experimental evidence that differences exist between the subject-matter claimed and the disclosure of some piece of prior art of which they became aware only during opposition proceedings. Hence, contrary to the appellant's view (letter of 23 May 2022, paragraph bridging pages 5 and 6), the assessment of novelty is not based on the same standard of examination as the issue for an inadmissible amendment under Article 123(2) EPC, insofar as it is possible to rely on information not contained in the patent, but provided at a later point in time, to the extent that this is relevant to determine whether the disclosure of the prior art is or is not novelty destroying.

2.5 That being said, the Board takes the view that the evidence provided by the respondent is not sufficient to show that the polyester resins of D5 technically differ from any polyester resin prepared by the method of granted claim 1. The reasons therefore are the following:

2.5.1 It is common ground between the parties that example 10 of document D5 discloses a PET resin having a final IV (IV_f) of 1.32 dL/g corresponding to an "ultra-high IV polyester resin" as defined in present claim 1 (D5, column 7, table III). It is also not contested that D5 does not disclose a process according to granted claim 1 (as no novelty objection was raised against said claim). However, it is the respondent's position that examples 12 and 13 of the opposed patent (supplemented by the information provided in D19) provide evidence that properties of any PET resin prepared by the process of granted claim 1 are different from the properties of the PET resins of D5. Specifically, the step of latent heat crystallisation would have an effect on the final PET in terms of IV gradient across the polyester particles, IV lift rate and the final percentage of crystallisation (rejoinder to the statement of grounds of appeal, page 11, last paragraph and page 12, last paragraph).

2.5.2 In this respect, the Board agrees with the appellant that the comparison of example 12 with example 13 is not sufficient to prove the novelty of the subject-matter of claim 9 over example 10 of document D5 (letter of 23 May 2022, page 4, third paragraph to page 5, fourth paragraph). According to declaration D19 (page 6, point 18), example 12 is a "*comparative resin having an initial state whereby the resin particles were previously solid-stated from <0.6 IV up to the 0.85 starting IV, thereby being contrary to the requirement of the present claims that the polyester starting material is prepared by melt polymerization with no more than 0.05 dL/g of IV lift due to solid-state polymerization*". Hence the process essentially corresponds to option A as described on page 4 of the appellant's letter dated 23 May 2022. In particular, the PET resin was initially prepared by melt polymerisation until a IV of <0.6 was achieved. Then a first step of solid-state polymerisation (SSP) was performed to reach the starting IV of 0,85. Consequently, as noted in D19, the process of example 12 essentially differs from the process of claim 1 in that it does not fulfill the requirement "*that the polyester starting material has been prepared by melt polymerization up to* IV_{st} *with no more than 0.05 dL/g of IV lift due to solid-state polymerization*" (as distinguishing feature between examples 12 and 13).

2.5.3 While the Board does not dispute the distinguishing feature between (comparative) example 12 and example 13 and that some conclusions may be drawn from the comparison between those examples, in particular as regards the effect of that distinguishing feature, the Board agrees with the appellant that example 12 is not representative of the disclosure of D5. Indeed, in D5, the starting material is not prepared by SSP using a PET resin having an IV <0,6. Already for that reason, any teaching derived from example 12 cannot be applied to the PET resins of D5.

2.5.4 In fact, contrary to the respondent's view, the process of example 10 of D5 does not correspond to the process of example 12 of the opposed patent for at least two reasons. First, the starting IV before SSP in example 10 of D5 is 0.75 as required by granted claim 1 and not less than 0.6 (D5, column 7, table III). Secondly, as noted by the respondent (rejoinder, pages 15 to 19, points 3.2.3.1 to 3.2.3.10), the starting PET resin according to D5 undergoes a specific crystallisation and drying process. Said process is, however, not carried out in example 12 of the patent.

2.6 Consequently, in the absence of suitable evidence that the PET resins of D5 having a final IV of at least 0,9 dL/g technically differ from any resin according to claim 9, the Board concludes that the subject-matter of said claim is not novel over example 10 of D5.

3. Remittal

3.1 The respondent requests that the case be remitted to the opposition division if the Board finds that the granted claims do not comply with the requirements of the EPC.

3.2 However, the respondent has not given any reason (let alone any special reason within the meaning of Article 11 RPBA) for remitting the case to the department of first instance and the Board cannot recognise any.

3.3 Consequently the request for remittal must be rejected, as previously indicated in the Board's communication under Article 15(1) RPBA (page 14, point 10), to which no reaction was filed by the respondent.

Auxiliary requests 1 to 7 (including requests 2a to 6a)

4. Preliminary remark

It should be noted that the appellant requested that the new auxiliary requests not be admitted to the proceedings. Since the Board has concluded that none of the auxiliary requests satisfies the novelty requirements, it is not necessary to decide on the admittance of these requests.

5. Novelty in view of document D5

5.1 Claim 9 of auxiliary requests 1, 2, 2a, 3, 3a, 4, 4a, 5, 5a, 6 and 6a and claim 8 of auxiliary request 7 have the same wording as granted claim 9. They are directed to "an ultra-high IV polyester resin prepared by the method of claim 1". In each of these requests the amendments concern process claim 1 (see point X. above for the details of the amendments). It should therefore be assessed whether the limitations introduced into process claim 1 are sufficient to overcome the objection of lack of novelty against granted claim 9.

5.2 Auxiliary request 1

5.2.1 Claim 1 of auxiliary request 1 differs from granted claim 1 in that the presence of comonomer in the PET resin (in amounts up to 30 mol%) is no longer optional.

5.2.2 The additional limiting feature of claim 1 was addressed by the appellant in the statement of grounds of appeal (page 19, second to fifth paragraphs). Specifically it was argued, with reference to the opposed patent (paragraph [0008]), that any PET resin contains diethylene glycol (DEG) as by-product and comonomer (corresponding to said additional feature).

5.2.3 The respondent did not contest that a comonomer such as DEG was "automatically" formed during the production of a PET resin but essentially argued that present claim 1 required that the polyester starting material comprised one or more comonomer(s) which was not the case in the process of D5 (rejoinder to the statement of grounds of appeal, page 37, point 1.1).

5.2.4 The Board does not agree with the reading of claim 1 put forward by the respondent. Contrary to the respondent's view, claim 1 merely specifies that "the polyester starting material is <u>a polyethylene terephthalate polymer</u>, containing one or more comonomers ..." but not that the starting material of the polyester (i.e. the initial reacting mixture) contains one or more comonomers. In other words, claim 1 does not indicate the starting material of the polyester resin but the starting material for the SSP. It follows that a PET polymer comprising DEG units due to side reactions is considered to correspond to a polyester starting material containing a comonomer as defined in claim 1, even if no comonomer was present in the initial monomer mixture leading to the PET polymer.

5.2.5 Therefore, the respondent's argumentation is not convincing and the amendment in auxiliary request 1 is not suitable to overcome the previous objection of lack of novelty over example 10 of document D5 (point 2. above).

5.3 Auxiliary requests 2 to 6

5.3.1 Auxiliary requests 2 to 6 were filed by the respondent in order to overcome an objection of lack of inventive step starting from D6 as the closest prior art (rejoinder, pages 39 and 40, points 2.4 to 2.8; page 41, points 3.2 to 5.2). However, the respondent did not explain whether and how the amendments to the claims would overcome any objection based on document D5.

5.3.2 Therefore,the Board has no reason to consider that auxiliary requests 2 to 6 are suitable to overcome the previous objection of lack of novelty over example 10 of document D5 (point 2. above).

5.4 Auxiliary requests 2a to 6a

5.4.1 Auxiliary requests 2a to 6a differ from auxiliary requests 2 to 6 respectively in that the PET polymer contains one or more comonomers in amounts up to 30 mol%.

5.4.2 However, as noted in relation to auxiliary request 1, this additional feature is not suitable to overcome the previous objection of lack of novelty over example 10 of document D5 (point 5.2 above).

5.5 Auxiliary request 7

5.5.1 Auxiliary request 7 differs from auxiliary request 2a essentially in that the one or more comonomers are selected from the group consisting of diethylene glycol (DEG), cyclohexane dimethanol (CHDM), 1,3-propane diol, isophthalic acid (IPA).

5.5.2 However, as noted in the context of auxiliary request 1, it is not disputed that DEG units are present in PET resins (points 5.2.2 and 5.2.3 above). Hence, the additional feature of present claim 1 is not suitable to overcome the previous objection of lack of novelty over example 10 of document D5 (point 2. above).

5.6 For these reasons, the Board comes to the conclusion that the subject-matter of claim 9 of auxiliary requests 1, 2, 2a, 3, 3a, 4, 4a, 5, 5a, 6 and 6a and of claim 8 of auxiliary request 7 is not novel over example 10 of D5.

6. Since none of the requests of the respondent is allowable, there is no need to deal with any other issue and 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