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Datasheet for the decision of 21 February 2024

Case Number: T 0467/22 - 3.3.03

Application Number: 17762458.2

Publication Number: 3260496

IPC: C08L67/02, C08L67/04, C08L25/14, C08L3/02, C08K5/1535, C08K5/156, C08K13/02

Language of the proceedings: EN

Title of invention:
BIODEGRADABLE POLYESTER COMPOSITION

Patent Proprietor:
Kingfa Sci. & Tech. Co., Ltd.

Opponents:
BASF SE
NOVAMONT SPA

Relevant legal provisions:
EPC Art. 54, 56, 111(1)
RPBA 2020 Art. 11, 12(3), 12(4), 12(5), 12(6), 13(2)

Keyword:

Late-filed evidence - admitted in first-instance proceedings (no) - circumstances of appeal case justify admittance (yes)
Late-filed evidence - should have been submitted in first-instance proceedings (no/yes)
Amendment after summons - exceptional circumstances (no)
Novelty - implicit disclosure (no)
Inventive step - improvement not credible - obvious alternative
Remittal - special reasons for remittal (no)
Discretion not to admit submission - requirements of Art. 12(3) RPBA 2020 met (no) - submission admitted (no)

Decisions cited:

T 0971/11, T 1731/19

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Case Number: T 0467/22 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 21 February 2024

Appellant: (Opponent 2)	NOVAMONT SPA Via G. Fauser 8 28100 Novara (IT)
Representative:	Maiwald GmbH Elisenhof Elisenstraße 3 80335 München (DE)
Respondent: (Patent Proprietor)	Kingfa Sci. & Tech. Co., Ltd. No.33 Kefeng Road Science City Guangzhou Hi-tech Industrial Development Zone Guangzhou, Guangdong 510663 (CN)
Representative:	dompatent von Kreisler Selting Werner - Partnerschaft von Patent- und Rechtsanwälten mbB Deichmannhaus am Dom Bahnhofsvorplatz 1 50667 Köln (DE)
Party as of right: (Opponent 1)	BASF SE Carl-Bosch-Str. 38 67056 Ludwigshafen (DE)
Representative:	Reitstötter Kinzebach Patentanwälte Sternwartstraße 4 81679 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 21 December 2021 rejecting the oppositions filed against European patent No. 3260496 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	D. Semino
Members:	M. Barrère
	W. Ungler

Summary of Facts and Submissions

I. The appeal of opponent 2 lies against the decision of the opposition division rejecting the oppositions against European patent No. 3 260 496.

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

D2: EP 3 260 497 B1
D3: EP 3 260 498 B1
D6: Cyclic Esters as NIAS in Adhesives and Coatings, Henkel AG & Co. KGaA, February 2018
D13: Canellas *et al.*, "UPLC–ESI-Q-TOF-MS^{E} and GC–MS identification and quantification of non-intentionally added substances coming from biodegradable food packaging", Analytical and Bioanalytical Chemistry, 2015, Vol. 407, pages 6781 to 6790
D22: Experimental report, "Polymer composition according to WO 2011/054896 A1", dated 17 June 2020
D23: WO 2011/054896 A1
D31: "Supplemental Experimental Report 1 in response to OP1", dated 13 November 2020
D32: "Supplemental Experimental Report 2 in response to OP2", dated 13 November 2020
D32a: "Supplemental Experimental Report 2 in response to OP2", dated 19 August 2021
D33: "Supplemental Experimental Report 3 of EP 3 260 496 B1", dated 13 November 2020
D42: "Supplemental Polymer composition according to WO 2011/054896 A1", dated 27 August 2021

D43: Supplemental Experimental Report, "Reproduction of section 1.2 of Annex A of D32 and section 2.1 of D33", dated 27 August 2021
D46: Experimental report, "Supplementary Experimental IV of EP 3 260 496 B1", dated 19 October 2021

III. The contested decision, as far as it is relevant to the present appeal, can be summarised as follows:

- Document D46 was not admitted into the proceedings.

- The subject-matter of granted claim 1 was novel in view of document D23 and involved an inventive step over this document as the closest prior art.

IV. Both opponent 1 and opponent 2 filed an appeal against said decision.

V. The following documents were *inter alia* submitted by the opponents during the appeal proceedings:

D49: EP 3 260 494 B1
D50: EP 3 260 495 B1
D51: Experimental report, "Polymer composition according to EP 3 260 496 B1", dated 1 May 2022
D56: Experimental report, "Versuchsbericht: Trocknungsversuche"
D43a: Supplemental Experimental Report, "Comparing drying conditions", dated 19 January 2024

D49 to D51 were filed by opponent 2 with its statement of grounds of appeal.
D56 was filed by opponent 1 with letter of 15 December 2023.

D43a was filed by opponent 2 with letter of 19 January 2024.

VI. In the rejoinder to the statements of grounds of appeal, the patent proprietor (respondent) maintained auxiliary requests I to IX, Xa and Xb filed during the opposition proceedings. With letter dated 16 November 2023, the respondent filed a further set of claims as auxiliary request Ia.

VII. With letter of 20 February 2024, opponent 1 withdrew its appeal. As a result, opponent 1 is a party as of right under Article 107 EPC and opponent 2 is the sole appellant.

VIII. On 21 February 2024 oral proceedings were held before the Board in the absence of opponent 1.

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

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

The respondent requested that the appeal be dismissed (main request), in the alternative that the case be remitted to the opposition division on the basis of one of auxiliary requests I, Ia, II to IX, Xa and Xb , whereby

auxiliary requests I to VII were filed on 25 August 2021 (with letter dated 16 August 2021),

auxiliary request Ia was filed with letter dated 16 November 2023 and

auxiliary requests VIII, IX, Xa and Xb were filed with letter dated 25 October 2021.

As a party as of right, opponent 1 did not file any request.

X. Claim 1 as granted (main request of the respondent) read as follows:

"1. A biodegradable polyester composition, characterized in that, it comprises following components in parts by weight:

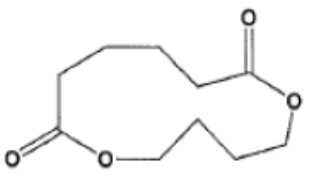
i) 60 to 100 parts of biodegradable aliphatic-aromatic polyester;

ii) 0 to 40 parts of polylactic acid;

iii) 0 to 35 parts of an organic filler and/or an inorganic filler;

iv) 0 to 1 part of a copolymer which contains epoxy group and is based on styrene, acrylate and/or methacrylate;

wherein, based on a total weight of the biodegradable polyester composition, a weight content of a cyclic ester compound having a structure shown as formula (I) is 100ppm-950ppm;



(I);

and based on the total weight of the biodegradable polyester composition, a weight content of tetrahydrofuran is 3ppm-200ppm."

Claim 1 of auxiliary request I corresponded to granted claim 1 in which the methods for the determination of the weight content of the cyclic ester compound and tetrahydrofuran were specified.

Claim 1 of auxiliary request Ia was identical to claim 1 as granted.

Claim 1 of auxiliary request II corresponded to granted claim 1 in which the weight content of the cyclic ester compound was limited to 160ppm-750ppm.

Claim 1 of auxiliary request III corresponded to granted claim 1 in which the weight content of tetrahydrofuran was limited to 8ppm-100ppm.

Claim 1 of auxiliary request IV corresponded to claim 1 of auxiliary request III in which the weight content of the cyclic ester compound was limited to 160ppm-750ppm.

Claim 1 according to auxiliary requests V, VI and VII corresponded to claim 1 according to auxiliary requests II, III and IV respectively, in which the methods for the determination of the weight content of the cyclic ester compound and tetrahydrofuran were specified.

Claim 1 of auxiliary request VIII corresponded to granted claim 1 further limited by the sentence:

"wherein the biodegradable aliphatic-aromatic polyester is one or more of poly(butyleneadipate-co-terephthalate) (PBAT), poly(butylenesuccinate-

co-terephthalate) (PBST) and poly(butylenesebacate-co-terephthalate) (PBSeT) and wherein the total amount of biodegradable aliphatic aromatic polyester is 60 to 100 parts by weight".

Claim 1 of auxiliary request IX corresponded to granted claim 1 further limited by the sentence:

"wherein the biodegradable aliphatic-aromatic polyester is poly(butylenesuccinate-co-terephthalate) (PBST) and wherein the total amount of biodegradable aliphatic aromatic polyester is 60 to 100 parts by weight".

Claim 1 of auxiliary request Xa read as follows:

"1. Use of a cyclic ester compound having a structure shown as formular (I) and tetrahydrofuran in a biodegradable polyester composition, comprising the following components in parts by weight:

i) 60 to 100 parts of biodegradable aliphatic-aromatic polyester;

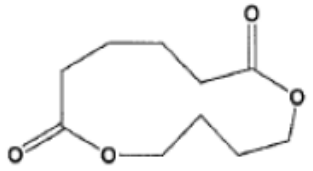
ii) 0 to 40 parts of polylactic acid;

iii) 0 to 35 parts of an organic filler and/or an inorganic filler;

iv) 0 to 1 part of a copolymer which contains epoxy group and is based on styrene, acrylate and/or methacrylate;

wherein, based on a total weight of the biodegradable polyester composition, a weight content of the cyclic

ester compound having a structure shown as formula (I) is 100ppm-950ppm;


(I);

and based on a total weight of the biodegradable polyester composition, a weight content of tetrahydrofuran is 3ppm-200ppm,

for preventing ink from stripping off a film material during a printing process and for preventing excessive ink from adhering to the film material, wherein the film material is the biodegradable polyester composition."

Claim 1 of auxiliary request Xb read as follows:

"1. Use of a cyclic ester compound having a structure shown as formular (I) and tetrahydrofuran in a biodegradable polyester composition being used for making films, for preventing ink from stripping off the film material during a printing process and preventing excessive ink from adhering to the film material, wherein the biodegradable polyester composition comprises the following components in parts by weight:

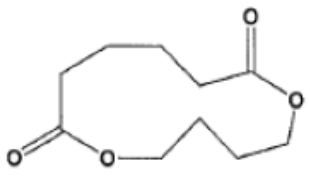
i) 60 to 100 parts of biodegradable aliphatic-aromatic polyester;

ii) 0 to 40 parts of polylactic acid;

iii) 0 to 35 parts of an organic filler and/or an inorganic filler;

iv) 0 to 1 part of a copolymer which contains epoxy group and is based on styrene, acrylate and/or methacrylate;

wherein, based on a total weight of the biodegradable polyester composition, a weight content of the cyclic ester compound having a structure shown as formula (I) is 100ppm-950ppm;



(I);

and based on a total weight of the biodegradable polyester composition, a weight content of tetrahydrofuran is 3ppm-200ppm."

The wording of the dependent claims of these requests is not relevant to this decision.

XI. The opponents' 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) Late-filed documents

Documents D43, D49 to D51, D56 and D43a should be admitted into the proceedings.

Document D46 should not be admitted into the proceedings.

In addition, the oral proceedings should be postponed if D46 were to be admitted to the proceedings but not

D51. Conversely, a remittal to the opposition division would not be justified if D51 were admitted.

(b) Main request (patent as granted) and auxiliary request Ia

(i) Novelty

The subject-matter of claim 1 of the main request and of auxiliary request Ia was not novel over the disclosure of document D23.

(ii) Inventive step

The subject-matter of claim 1 of the main request and of auxiliary request Ia lacked an inventive step over document D23 as the closest prior art.

(c) Auxiliary requests I, II to IX, Xa and Xb

Auxiliary requests I, II to IX, Xa and Xb should not be admitted into the proceedings.

(d) Remittal

The present case should not be remitted to the opposition division for a decision on the auxiliary requests.

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) Late-filed documents

Documents D43, D49 to D51, D56 and D43a should not be admitted into the proceedings.

Document D46 should be admitted into the proceedings.

In addition, the present case should be remitted to the opposition division if D51 were to be admitted to the proceedings.

(b) Main request (patent as granted) and auxiliary request Ia

(i) Novelty

The subject-matter of claim 1 of the main request and of auxiliary request Ia was novel over the disclosure of document D23.

(ii) Inventive step

The subject-matter of claim 1 of the main request and of auxiliary request Ia involved an inventive step over document D23 as the closest prior art.

(c) Auxiliary requests I, II to IX, Xa and Xb

Auxiliary requests I, II to IX, Xa and Xb should be admitted into the proceedings.

(d) Remittal

The present case should be remitted to the opposition division for a decision on the auxiliary requests.

Reasons for the Decision

1. Admittance of late-filed documents

1.1 Document D51

1.1.1 D51 is an experimental report describing experiments and compositions according to the opposed patent (D51, page 2, point 1). It was filed by the appellant with its statement of grounds of appeal. The admission of D51 to the proceedings, which is contested by the respondent, is subject to the discretionary power of the Board in accordance with Article 12 paragraphs (4) to (6) RPBA.

1.1.2 According to the appellant, D51 was filed in response to the contested decision, in which the opposition division considered that a technical problem (improved anti-thermal oxidative aging property, surface appearance property ΔL and printing performance) had been solved over the whole scope of the claims (statement of grounds of appeal of opponent 2, section 7 on pages 2 and 3). Moreover, in reaching this conclusion, the opposition division took into account document D33 filed by the respondent but ignored the experimental evidence and arguments provided by the appellant during the opposition proceedings. D51 was therefore also filed in reaction to the fact that previous submissions in relation to the effect of the claimed invention had not been taken into consideration (letter of the appellant dated 19 January 2024, page 6, section 26).

1.1.3 The admittance of D51 is contested by the respondent for the following reasons (rejoinder, page 10, section 2 and arguments put forward during the oral proceedings before the Board):

there was no well-founded reasoning as to why D51 could not have been submitted during the opposition proceedings;

the question of the effect of the claimed invention was discussed from the onset of the opposition proceedings;

document D33 had been addressed by the opposition division in the communication attached to the summons to oral proceedings (page 11, section 4); hence D51 should have been filed at the latest in reaction to that communication and not during appeal proceedings;

admitting D51 would be incompatible with the purpose of the appeal proceedings which is to review the decision under appeal in a judicial manner but not to continue the opposition proceedings (Article 12(2) RPBA);

D51 was not *prima facie* relevant;

D51 also concerned a new objection of insufficient disclosure related to granted claims 8 and 9. Should this document be admitted into the proceedings, its use should be limited to the matter of inventive step.

1.1.4 The Board first notes that document D51 relates amongst others to the properties of compositions falling within

the scope of granted claim 1 (D51, page 15, tables 5 and 6 and page 16, tables 7 and 8). Therefore, *prima facie*, D51 is relevant to the question of whether the claimed invention solves a technical problem.

1.1.5 It is further acknowledged that the alleged effects of the claimed invention were discussed from the onset of the opposition proceedings. In that respect, the opposition division came to the conclusion that technical effects (improved anti-thermal oxidative aging property, surface appearance property ΔL and printing performance) could be derived from embodiments 1 to 16 of the patent and document D33 (contested decision, page 26, last paragraph). Moreover, the opposition division pointed out that the arguments of opponent 2 were "*purely based on speculation without being backed up by appropriate evidence*". This statement is, however, at odds with the fact that the appellant had submitted experimental report D43 (originally filed as document D35) to show, *inter alia*, that the test protocol described in D33 could not be reproduced and that no technical effect could be derived from that document (letter of the appellant dated 27 August 2021, paragraph bridging pages 22 and 23).

1.1.6 The Board therefore holds that the decision of the opposition division, which considered that the opposed patent and D33 could be used to recognise an effect of the claimed invention but did not take into consideration the counter-evidence of D43, must have come as a surprise to the appellant. The filing of D51 addressing that issue is therefore regarded as a legitimate and timely reaction to the contested decision.

1.1.7 While the Board acknowledges that the appeal proceedings is primarily a judicial review of the contested decision, it does not mean that any new submission filed in appeal should necessarily be rejected. In the present case, a key issue was decided by the opposition division without explicitly addressing all the facts and arguments presented by the losing parties. The filing of evidence in relation to this omission is therefore under the present circumstances admissible.

1.1.8 The respondent requested that the use of document D51 be limited to the issue of inventive step. Since D51 was only used for that purpose in the present decision, the question whether it can be used for another objection can be left open.

1.1.9 In view of this, the Board finds it appropriate to exercise its discretion under Article 12(4) RPBA by admitting document D51 (as far as inventive step is concerned) into the proceedings.

1.2 Document D43

1.2.1 Document D43 was filed as document D35 by the appellant with letter dated 27 August 2021, i.e. within the time limit under Rule 116(1) EPC for filing written submissions (27 August 2021). The opposition division did not take this document into consideration in the contested decision and did not decide on its admittance (page 32, point 5.4.2).

1.2.2 According to the appellant, a purpose of D43 is to provide evidence that the test protocol described in D33 cannot be reproduced and that no technical effect may be derived from that document (letter of the

appellant dated 27 August 2021, paragraph bridging pages 22 and 23).

1.2.3 The respondent argued that D43 was late-filed and that the appellant did not address this document during the oral proceedings before the opposition division. Consequently, it should not be admitted into the proceedings.

1.2.4 The Board notes that D43 has been submitted for reasons similar to those for D51, i.e. to show that the problem addressed in the opposed patent was not solved over the whole scope of granted claim 1. Moreover D43 was filed in direct response to experimental report D33 provided by the patent proprietor as evidence of a technical effect. For this reason alone, the Board considers that D43, as a rebuttal to D33, is *prima facie* relevant to the matter in dispute and a timely response to a new submission (D33) from the patentee.

1.2.5 It is true that the minutes of the oral proceedings before the opposition division do not mention that D43 was addressed by the parties. However, D43 was discussed in the written submissions of the appellant (letter of the appellant dated 27 August 2021, paragraph bridging pages 22 and 23). Therefore, in the absence of any indication to the contrary, there is no reason for the Board to consider that D43 and the written arguments relating to this document were withdrawn or abandoned by the appellant.

1.2.6 Under these circumstances, the Board finds it appropriate to exercise its discretion under Article 12(4) RPBA by admitting document D43 into the proceedings.

1.3 Document D46

1.3.1 Document D46 was filed by the patent proprietor but not admitted into the proceedings by the opposition division (pages 30 and 31, point 5.3 of the contested decision).

1.3.2 According to established case law, the fact that the opposition division did not admit a late-filed document and did not exceed the proper limits of its discretion does, in principle, not prevent the Board from admitting the document in particular if the circumstances of the appeal justify this decision (Case Law of the Boards of Appeal, 10th edition 2022, in the following "Case Law", V.A.3.4.2.b and V.A.3.4.3.a; Article 12(6) RPBA). In particular, a submission which would have been admitted into the appeal proceedings if it had been filed for the first time at the outset of those proceedings should not be held inadmissible under Article 12(4) RPBA, for the sole reason that it was already filed before the department of first instance and not admitted (T 971/11, section 1.3 of the reasons).

1.3.3 In the present case, D46 relates to the same issue as D43 and D51, i.e. whether or not a technical effect can be recognised for compositions according to granted claim 1. As mentioned above, D43 and D51 were submitted by the appellant in order to show that the subjective problem to be solved in the opposed patent was not solved over the whole scope of granted claim 1. Given that D43 and D51 were admitted by the Board in the appeal proceedings, D46 (promptly filed as counter-evidence to D43) should be admitted for the same reasons. Consequently, although D46 was not admitted by

the opposition division, the circumstances of the appeal case justify its admittance.

1.3.4 Therefore, the Board finds it appropriate to exercise its discretion under Article 12(6) RPBA by admitting document D46 into the proceedings.

1.4 Documents D49 and D50

1.4.1 D49 and D50 were filed by the appellant with its statement of grounds of appeal. Their admittance to the proceedings, which is contested by the respondent, is subject to the discretionary power of the Board in accordance with Article 12 paragraphs (4) to (6) RPBA.

1.4.2 According to the appellant, these documents were filed in response to the contested decision, in which the opposition division had no doubt that a technical problem had been solved over the whole scope of the claims (statement of grounds of appeal of opponent 2, page 2, section 6). At the oral proceedings, the appellant further pointed out that D49 and D50 had been considered relevant by the Board in its communication under Rule 15(1) RBPA. For these reasons, D49 and D50 should be admitted into the proceedings.

1.4.3 The admittance of D49 and D50 is contested by the respondent for the following reasons (rejoinder, page 10, point 2.):

> the appellant did not explain why these documents could not have been submitted in the opposition proceedings,
>
> D49 and D50 were not *prima facie* relevant.

1.4.4 The Board notes that the main purpose of D49 and D50 is to show that the examples in the opposed patent (EP 3 260 496 B1) had similarities with those of the parallel patents D49 (EP 3 260 494 B1) and D50 (EP 3 260 495 B1). During opposition proceedings, a similar line of attack was put forward by the opponents based on a comparison of the opposed patent with parallel patents D2 (EP 3 260 497 B1) and D3 (EP 3 260 498 B1). The Board considers that the purpose of D49 and D50 does not differ from that of D2 or D3 and makes no discernible additional contribution to the case. Moreover, D49 and D50 belong to a set of at least five patents (together with D2, D3 and the opposed patent) with the same proprietor, inventors and priority date. Thus the Board sees no reason why D49 and D50, if relevant, could not have been filed together with D2 and D3 (i.e. with the notices of opposition).

1.4.5 Under these circumstances, the Board finds it appropriate to exercise its discretion under Article 12(6) RPBA by not admitting documents D49 and D50 into the proceedings.

1.5 Documents D56 and D43a

1.5.1 D56 and D43a were filed by the opponents with letters dated 15 December 2023 and 19 January 2024 respectively and therefore after notification of the Board's communication under Article 15(1) RBPA (dated 10 October 2023). The purpose of these documents is to show that, under normal drying conditions, the levels of tetrahydrofuran (THF) and cyclopentanone (CP) in a polyester composition decrease significantly (letter dated 15 December 2023, page 8, penultimate paragraph to page 9, second paragraph; letter dated 19 January 2024, page 8, section 36).

1.5.2 The respondent requested that D56 and D43a not be admitted into the proceedings.

1.5.3 The admittance of these documents is subject to the provisions of Article 13(2) RPBA, which provide that amendments made after the communication under Article 15(1) RBPA shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

1.5.4 According to the opponents, D56 and D43a were filed in response to the Board's preliminary view that the criticisms raised by the party as of right against document D33 were speculative (letter dated 15 December 2023, page 2, third paragraph with reference to the communication under Article 15(1) RBPA, page 32, first full paragraph). The opponents addressed the Board's concerns by providing evidence of the effect of drying on the levels of THF and CP in a polyester composition.

1.5.5 The respondent argued that these documents could and should have been filed at an earlier stage of the proceedings.

1.5.6 The Board takes the view that the effect of drying on the volatile organic content (VOC) of polyester compositions was discussed on several occasions during the opposition and appeal proceedings (see minutes of the oral proceedings before the opposition division, page 4, first full paragraph; rejoinder to the statements of grounds of appeal, page 31, first paragraph). If the opponents had intended to support their arguments with experimental data, they should

have done so at an earlier stage of the proceedings. In any event, the preliminary opinion of the Board, which discusses the submissions already on file on the degree of VOC reduction due to drying, does not qualify as an exceptional circumstance justifying the admission of D56 and D43a.

1.5.7 Under these circumstances, documents D56 and D43a are not taken into account (Article 13(2) RPBA).

1.6 Additional requests in relation to document D51

1.6.1 The appellant requested a postponement of the oral proceedings in the event that D46 were admitted to the proceedings but not D51. In view of the fact that D51 has been admitted into the proceedings, the conditional request for postponement is moot.

1.6.2 The respondent requested that the present case be remitted to the opposition division if D51 were admitted to the proceedings.

1.6.3 According to Article 11 RPBA, the Board shall not remit a case to the department whose decision was appealed for further prosecution, unless special reasons present themselves for doing so (emphases here and below added by the Board).

1.6.4 During the oral proceedings before the Board, the respondent stated that D51 related *inter alia* to a new objection of insufficient disclosure which had not been part of the opposition proceedings. The case should therefore be remitted to the opposition division to consider this new objection. In addition the respondent contended that part of D51 pertained to the question of inventive step and whether a technical problem was

solved over the whole scope of the claims. The case should also be remitted to the opposition division to allow the respondent to submit counter-evidence.

1.6.5 As mentioned above (point 1.1.8), the objection of insufficient disclosure in connection with D51 was not addressed in the present decision. Consequently, the first reason given by the respondent for the remittal is not relevant.

1.6.6 As regards the question of inventive step, despite the new experimental data provided in D51, this document does not change the present case (for example, it does not give rise to a fresh objection) but merely serves to confirm an argument already made by the appellant already during the opposition proceedings. In these circumstances, the submission of a document which merely supports an inventive step argument already part of the proceedings does not constitute a special reason justifying remittal of the case to the opposition division.

1.6.7 Consequently, the request for remittal relating to the admittance of D51 must be rejected.

Main request (patent as granted)

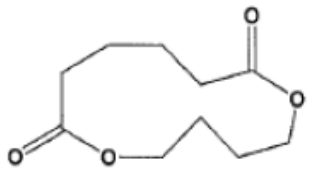
2. Preliminary remarks

Granted claim 1 is directed to a biodegradable polyester composition, characterised in that, it comprises the following components in parts by weight:

i) 60 to 100 parts of biodegradable aliphatic-aromatic polyester;
ii) 0 to 40 parts of polylactic acid;

iii) 0 to 35 parts of an organic filler and/or an inorganic filler;
iv) 0 to 1 part of a copolymer which contains epoxy group and is based on styrene, acrylate and/or methacrylate;

wherein, based on a total weight of the biodegradable polyester composition, a weight content of a cyclic ester of formula (I) (referred in the following as cBA) is 100ppm-950ppm;



(I);

and based on the total weight of the biodegradable polyester composition, a weight content of tetrahydrofuran (THF) is 3ppm-200ppm.

In relation to novelty and inventive step, the main points of dispute between the parties were whether:

i) document D23 disclosed a polyester composition comprising THF and cBA in amounts as defined in granted claim 1 (dealt with under point 3.4 below);

ii) any technical effect could be attributed to the levels of THF and cBA in the polyester compositions in particular within the ranges specified in claim 1 (dealt with under point 4.3 below).

3. Novelty over document D23

3.1 According to the appellant, the subject-matter of granted claim 1 is not novel in view of example 1 of D23.

3.2 In the contested decision, the opposition division came to the conclusion that a truly representative reproduction of example 1 of D23 was not possible. Hence it could not be said that the polyester of example 1 inevitably contained amounts of cBA and THF within the ranges of claim 1 (decision, page 19, third paragraph).

3.3 The appellant argued that the respondent did not provide sound evidence for the allegation that the product of example 1 would not contain THF and cBA in the amounts required by claim 1. On the contrary it would be shown in D42 and D22 that products representing the composition of example 1 were according to claim 1.

3.4 In this respect, the Board agrees with the opposition division and the respondent for the following reasons:

3.4.1 An explicit disclosure of the content of cBA and THF in the compositions of D23 is not present in this document.

3.4.2 It was not disputed between the parties that cBA and THF are by-products formed during the esterification reactions involving 1,4-butane diol (BDO) and adipic acid (ADA) (see summary presented under point III of the statement of grounds of appeal of opponent 2). Therefore a polyester derived from BDO and ADA (such as the PBAT of example 1 of D23) is expected to contain cBA and THF as so-called non-intentionally added substances (NIAS).

However it was also not disputed that the levels of cBA and THF present implicitly in said polyester depend on

the synthesis process, polyester processing and storage conditions.

3.4.3 It was also not contested among the parties that the experimental conditions to prepare the polyester of example 1 are not disclosed in D23.

3.4.4 According to established case law, it is a prerequisite for the acceptance of lack of novelty that the claimed subject-matter is "directly and unambiguously derivable from the prior art". In other words, it has to be "beyond doubt – not merely probable – that the claimed subject-matter was directly and unambiguously disclosed in a patent document" (Case Law, I.C.4.1). Furthermore contrary to the appellant's view, the burden of proof lies initially with the opponents to provide evidence that all the features of claim 1 were directly and unambiguously disclosed in the prior art (Case Law, III.G.5.1.1).

3.4.5 In the present case, the experimental conditions to prepare the polyester of example 1 are not disclosed in D23. Moreover, the general part of the description specifies that any process known to the state of the art may be used (D23, page 5, lines 11-12). As a non limiting example, a process based on a polycondensation reaction is mentioned (D23, page 5, lines 12-13). Likewise any suitable catalyst can be chosen (D23, page 5, lines 14-15). Thus any known process and catalyst could have been used to prepare the polyester of example 1. It is, however, notorious that the preparation method has an effect on the content of side-products (in particular volatiles) present in the final polymer. As a matter of example, D32/D32a shows that conditions may be found in which the VOCs of the final composition are above the required levels (D32,

page 4, table 2 and D32a, page 4, table 2). Conversely, D42 shows that under different experimental conditions, the content of cBA and THF can be within the ranges defined in present claim 1 (D42, page 11, tables 3 and 4). This is further in line with the skilled person's common general knowledge. For example, the arbitrary decision to apply (or not) vacuum for a certain period of time and at a certain reduced pressure at the end of the polymerisation will obviously have an effect on the volatile content of the polyester. In this regard, reference is made to section 45 on page 7 of the statement of grounds of appeal of opponent 2 reporting the boiling point as well as the vapour pressures at different temperatures of THF.

3.4.6 In conclusion, although the appellant provided D42 and D22 to show that under certain experimental conditions the composition of example 1 could be characterised by a content of by-products as defined in claim 1, it is not credible (let alone beyond any reasonable doubt) that any process within the ambit of D23 will lead to the same result.

3.5 Therefore the Board has no reason to depart from the opposition division's findings that:

it has not been established beyond any reasonable doubt that the composition of example 1 of D23 anticipates the subject-matter of claim 1, and

the contents of cBA and THF are distinguishing features (relevant for the assessment of inventive step).

4. Inventive step over document D23

4.1 Closest prior art

It was not disputed by the parties that document D23 (and in particular example 1 thereof) could be selected as the closest prior art for the subject-matter of granted claim 1.

The Board has no reason to deviate from that view.

4.2 Distinguishing features

With respect to novelty (see point 3.5), the Board concluded that the subject-matter of claim 1 differed from example 1 of D23 in that the polyester composition comprised:

(i) 3ppm-200ppm of THF and

(ii) 100ppm-950ppm of cBA

based on the total weight of the biodegradable polyester composition (whereas the levels of cBA and THF in the composition of example 1 of D23 are unknown). No other possible distinguishing feature was identified by the respondent.

4.3 Problem to be solved

4.3.1 The respondent relied on the experimental data in the patent and in documents D33 and D46 to show that polyester compositions having cBA and THF contents as defined in claim 1 would be characterised by improved anti-thermal oxidative ageing property, surface appearance property (ΔL), and printing performance (rejoinder to the statements of grounds of appeal, page 34, last paragraph to page 38, last paragraph).

4.3.2 The opponents held that the experimental evidence provided in the opposed patent did not allow to draw any conclusion as to the effect of distinguishing features (i) and (ii). Moreover, the party as of right contended that the supplementary experiments of D33 and D46 could not be reproduced due to missing information and were not credible (letter dated 10 March 2023, page 9, paragraph 4.2.1 to page 11, paragraph 4.2.2; letter dated 15 December 2023, pages 7 to 9, point 5.2.1). In addition, even if some examples provided by the respondent would be characterised by improved properties, it was argued that this improvement could not be achieved over the whole scope of granted claim 1 (statement of grounds of appeal of opponent 2, pages 34 and 35, sections 159 to 162; letter dated 15 December 2023 of the party as of right, pages 11 and 12, point 5.2.3). For these reasons, the objective problem to be solved should be formulated as the provision of an alternative biodegradable composition.

4.3.3 As regards the definition of the problem to be solved, the Board agrees with the opponents for the reasons set out below. In this respect, the experimental data relied upon by the parties are dealt with separately.

4.3.4 Examples of the opposed patent

(a) The opponents argued that the experimental results provided in the opposed patent were identical to those of parallel patents D2 and D3 albeit the polyester compositions were different. This cast doubts on the credibility of the data in the opposed patent (statement of grounds of appeal of opponent 1, pages 10 to 12, point 4.2.2.2).

(b) The respondent considered that the criticisms of the opponents were mere allegations and that D2 and D3 were irrelevant for the opposed patent as these documents pertained to different inventions (rejoinder to the statements of grounds of appeal, page 12, penultimate paragraph).

(c) It should first be noted that documents D2 and D3 are European patents claiming the same priority date, and sharing the same patent proprietor and inventors as the opposed patent. D2 and D3 pertain to polyester compositions comprising 3ppm-200ppm of THF or 100ppm-950ppm of cBA respectively (but not both as in the opposed patent). Furthermore, in addition to THF or cBA, the compositions of D2 and D3 contain 0.5ppm-85ppm of cyclopentanone (CP) (see D2, claim 1 and D3, claim 1).

As pointed out by the opponents, the experimental section of the opposed patent includes embodiments 1 to 6 and 8 to 16 disclosing compositions according to granted claim 1 with various amounts of cBA and THF (no CP is mentioned). Tables 1 and 2 of the patent report selected properties of these compositions such as the "level of printing performance", the "time for thermal oxidative aging /day" or the surface appearance property "ΔL". The levels of printing performance of embodiments 1 to 6 and 8 to 16 are identical to those of embodiments 1 to 7 and 9 to 16 of D2 respectively, although these compositions contain CP and THF but no cBA (at least not explicitly). Likewise the ageing and surface appearance properties of embodiments 1 to 16 of the patent are identical to the third digit to those of embodiments 1 to 16 of D3 respectively, although

these compositions contain CP and cBA but no THF (at least not explicitly). To illustrate the similarities between the embodiments of the opposed patent and those of D2 and D3, reference is made to tables 2a-2f of the statement of grounds of appeal of opponent 2 (pages 11 to 16). Therefore, the Board concludes that the properties of embodiments 1 to 16 of the patent are identical to those of compositions of D2 and D3 which, however, are defined as containing different impurities.

(d) The opponents took the view that the compositions tested in the opposed patent were identical to those of D2 and D3 but that certain constituents had been omitted (such as CP in the opposed patent, cBA in D2 and THF in D3; in that respect, reference is made to the table on page 11 of the statement of grounds of appeal of opponent 1). The respondent did not provide any explanation for the similarities of the experimental results and rejected the opponents' criticisms as allegations.

(e) In the absence of any explanation for the similarities in properties, the Board is faced with two possibilities. The first is that the compositions tested in D2, D3 and in the opposed patent were identical, but one (or more) component was omitted in each case. In this situation, the Board cannot rely on the examples in the opposed patent to identify a technical effect because at least one component is missing that could explain the observed differences in properties. In the alternative, the compositions tested in D2, D3 and the opposed patent were different. However, in that case it is not plausible that a set of sixteen different compositions are characterised by

identical properties (to the third digit as far as the appearance ΔL is concerned).

(f) Thus, in both cases, the Board must conclude that the experimental data of the opposed patent are not credible and cannot be relied upon to recognise a technical effect related to the above distinguishing features.

4.3.5 The experimental reports D33 and D46 (submitted by the respondent)

(a) The opponents argued that D33 would not disclose the conditions under which the biodegradable polyester compositions and the films derived therefrom were produced. The party as of right also considered that the experimental data presented in D33 were not credible. In particular, it would not be plausible that the volatile compound THF remain almost completely in the composition during melting, extrusion, granulation and subsequent drying. For these reasons, the results reported in D33 would be neither reproducible nor credible. The same would apply to D46 (letter of 10 March 2023, pages 9 to 11, point 4.2; letter of 15 December 2023, pages 7 to 9, point 5.2.1).

(b) The respondent considered that documents D33 and D46 showed that the anti-thermal oxidative ageing property, the surface appearance property ΔL and the printability of polyester compositions were improved when the levels of cBA and THF were within the ranges defined in claim 1. The opponents' criticisms of D33 and D46 were speculative (letter dated 16 November 2023, page 10, first paragraph). During the oral proceedings before the Board, the

respondent further argued that the levels of THF and cBA in a polyester composition could be maintained even during a heat treatment or drying process. In particular, it was considered that THF and cBA could be formed during the drying step. The respondent further contended that the particle size of the pellets influenced the drying performance.

(c) The Board notes that D33 and D46 are experimental evidence from the respondent showing different compositions in which the levels of cBA and THF were varied while the content of the other components (including CP) was kept constant (D33, page 3, table 2 and D46, page 3, table 2). These compositions were prepared by blending the different ingredients followed by melting, extruding and pelletising each composition (D33, pages 7 to 9). In a final step, the compositions were dried "4 hours at 75°C in air with a dew point of -50°C to -60°C". However, as pointed out by the party as of right, the amount of THF initially added to the compositions and the amount present after melting, pelletising and drying are almost unchanged. As a matter of example, in comparative embodiment 5 of D33, 100 ppm of THF was added to the composition while, even after compounding and drying, the amount of THF remaining in the composition was 97 ppm (i.e. a loss of about 3%, see table 2). Similar results are observed in D46 (see pages 7-8, comparative embodiment 1 and table 2).

(d) It was, however, not contested by the parties that THF is a volatile organic compound having a boiling point of 66°C (statement of grounds of appeal of opponent 2, page 7, section 45). In particular, the

appellant provided experimental data showing that, after 3 months of storage, the THF content in a polyester composition decreased drastically (D22, page 9, table 2 and page 10, table 3). Moreover, as noted by the appellant, further evidence submitted by the respondent suggests that the step of compounding alone leads to a significant loss of THF in the composition. During the oral proceedings before the Board, reference was made to D31 in which the composition of embodiment 2 initially contained a calculated amount of THF of about 52 ppm (based on the THF content of polyester D11-PBSeT) while the compounded product contained only 33 ppm of THF corresponding to a loss of about 36%. For these reasons, the Board considers that it is not credible that, after compounding and an intensive drying step (4 hours at 75°C in air with a dew point of -50°C to -60°C), the THF content in the compositions of D33 and D46 remains almost constant.

It should also be noted that the respondent initially supported the Board's preliminary view (in a discussion on D31) that drying had an effect on the content of cBA and THF (letter of 16 November 2023, page 9, last paragraph, with reference to the communication pursuant to Rule 15(1) RPBA, page 29, first full paragraph). The arguments to the contrary put forward at the oral proceedings are therefore not convincing, especially as the respondent did not submit any evidence on the effect of drying alone or the alleged formation of THF during drying.

(e) Consequently, the Board takes the view that it is not credible that the experimental set up disclosed

in D33 and D46 can lead to polyester compositions with the amounts of THF disclosed in table 2 of these documents. It follows that the Board cannot rely on these experimental reports to acknowledge any technical effect related to the amounts of cBA and THF (corresponding to distinguishing features (i) and (ii)) in the polyester compositions.

4.3.6 Experimental reports D43 and D51

(a) In view of the fact that the experimental data relied upon by the respondent are not considered credible, the Board cannot identify a technical effect related to the levels of cBA and THF in polyester compositions. Therefore, the counter-evidence submitted by the appellant in the form of documents D43 and D51 need not, in principle, be taken into account.

Nevertheless, for the sake of completeness, the following is noted:

(b) D43 was provided to show *inter alia* that polyester "PBAT P1" of D33 cannot be reproduced and that this polymer was not suitable to obtain a film. The Board is, however, not convinced that D43 discloses a true reproduction of "PBAT P1" of D33 since the drying step of D33 appears to have been omitted in D43 (D33, pages 5 and 6, item 2.1 vs. D43, page 5, point 3.4).

(c) D51 was submitted to provide evidence that embodiments falling under the scope of granted claim 1 were not characterised by improved properties (D51, page 2, point 2). The respondent argued that the starting materials (such as the

epoxy copolymer) used in D51 were different from the ones used in D33 or D46. Therefore D51 would not be suitable to cast doubt on the experimental evidence provided by the respondent. However, the Board considers that the relevant question for the intended purpose of D51 is not whether the starting materials in D51 and D33/D46 are the same but whether the compositions of D51 are embodiments according to the claimed invention. In this respect, it was not disputed that the materials used in D51 corresponded to components defined in granted claim 1. Consequently, the Board considers that compositions 1 to 3 of D51 correspond to polyester compositions according to claim 1 as granted (D51, tables 1 and 5). Moreover, the level of printing performance of composition 2 was shown to be insufficient (D51, Table 8).

With regard to the other properties (ageing resistance and appearance ΔL), the Board notes that differences can be observed between the compositions. However, D51 does not provide any comparative examples, so it does not seem possible to draw any conclusions in relation to the content of THF and cBA.

(d) The Board therefore concludes that D51 only provides evidence that one of the technical problems identified by the respondent (improving printability) is not solved over the whole scope of claim 1 as granted.

4.3.7 For these reasons, the Board cannot acknowledge any technical effect linked to the levels of cBA and THF in polyester compositions. The objective problem to be solved over example 1 of document D23 is therefore

formulated as the provision of an alternative polyester composition.

4.4 Obviousness

It remains to be evaluated whether it was obvious for a skilled person wishing to provide an alternative to the polyester composition of example 1 of D23 to adjust the contents of cBA and THF within the ranges defined in granted claim 1.

4.4.1 According to the opponents, the skilled person wishing to put the teaching of D23 into practice would have obtained a polyester composition according to claim 1 simply by applying ordinary process conditions (statement of grounds of appeal of opponent 2, page 37, paragraph 174).

4.4.2 The respondent argued that, in view of the cited prior art, it was not obvious to adjust the levels of cBA and THF within the ranges defined in granted claim 1. THF and cBA were unavoidable impurities of polyesters derived from BDO and ADA such as the PBAT of example 1 of D23 (D6, page 2, figure 2 and D13, abstract). The skilled person would have no reason to maintain these impurities at levels according to the claimed invention. It was furthermore pointed out that the cBA content in a polyester was the result of an equilibrium state (D6, page 3, penultimate paragraph) and that this compound could not be removed by drying due to its boiling point of about 420°C.

4.4.3 As noted by the parties, the polyester PBAT of example 1 of D23 and the composition derived therefrom comprise implicitly THF and cBA as impurities which are formed during the synthesis of the polyester. The exact

contents thereof are, however, unknown since the conditions of synthesis of the PBAT are not disclosed in D23. The appellant provided evidence that, under normal process conditions, a composition comprising 3 to 200 ppm of THF and 100 to 950 ppm of cBA could be obtained (D42, pages 2 to 5, sections 2 to 3.3 and page 11, tables 3 and 4). Therefore, the Board considers that the skilled person wishing to simply reproduce example 1 of D23 would have automatically obtained a composition according to granted claim 1 by merely using ordinary process conditions. Contrary to the respondent's view, it is not considered to be necessary that the skilled person had any intention to adjust the levels of cBA and THF as impurities to arrive at the subject-matter of claim 1. Instead it is only required that s/he has the willingness to provide an alternative composition. It follows that selecting usual process conditions which result in levels of impurities present in the composition derived therefrom according to granted claim 1 was an obvious option for a person skilled in the art wishing to provide an alternative composition.

4.4.4 With regard to the respondent's argument that the skilled person would have no reason to maintain a certain level of impurities (i.e. of unwanted substances) in the polyester composition of D23, the following is noted:

The respondent's argument might have some persuasive power if the levels of cBA and THF defined in granted claim 1 were relatively high. However, it has not been shown that these levels were unusual in the present technical field. In fact, contrary to the respondent's view, the evidence provided by the opponents suggests that these levels are not uncommon (see for example

D22, page 9, table 2; D43, page 10, table 2; D42, page 11, tables 3 and 4; D51, page 15, table 5). In any event, the problem to be solved is merely to provide an alternative composition, so that the arbitrary choice of specific impurity levels that can be obtained under normal process conditions cannot involve an inventive step.

4.5 For these reasons, the subject-matter of granted claim 1 lacks an inventive step over example 1 of D23 as the closest prior art.

Auxiliary request Ia

5. As claim 1 of auxiliary request Ia is identical to granted claim 1, its subject-matter does not involve an inventive step over document D23 as the closest prior art for the same reasons (point 4. of the present decision).

Auxiliary requests I to IX, Xa and Xb

6. Remittal- prerequisite

6.1 The respondent requested that the case be remitted to the opposition division to deal with auxiliary requests I to IX, Xa and Xb. The Board understands from the respondent's submissions that the request for remittal should be dealt with before a decision is made on the admittance of the auxiliary requests. However, a decision whether a case is remitted to the first instance can be taken only if there are pending requests which are in (or are admitted into) the proceedings. Therefore the status of the requests and a decision on their admittance are to be assessed first. Furthermore it is noted that there is no right of the

parties to choose in which form the Board should exercise its competencies under Article 111(1) EPC. Thus, the Board is entitled to decide on the issue of admittance of the auxiliary requests without being bound to the respondent's request for prioritisation of the request for remittal (see T 1731/19, Reasons 8.2).

7. Admittance

7.1 Auxiliary requests I to IX, Xa and Xb were filed during the opposition proceedings (auxiliary requests I to VII: two months before oral proceedings; auxiliary requests VIII, IX, Xa and Xb: two days before the oral proceedings). The opponents requested that these requests not be admitted into the proceedings due to a lack of substantiation.

7.2 As regards auxiliary requests I to IX, Xa and Xb, the respondent merely referred to "the written procedure in the opposition procedure" and requested a remittal (rejoinder to the statement of grounds of appeal, page 41, last paragraph).

7.3 According to Article 12(3) RPBA the statement of grounds of appeal and the reply shall contain a party's complete appeal case. They shall set out clearly and concisely the reasons why it is requested that the decision under appeal be reversed, amended or upheld, and should specify expressly all the requests, facts, objections, arguments and evidence relied on.

7.4 It follows that a patent proprietor who submits sets of claims with the reply to the appeal in order to define fall-back positions must also explicitly set out the substantive arguments for these auxiliary requests ("substantiation requirement"). This requires

statements indicating which objections raised in the appeal against the main requests are overcome by the amendments made in the auxiliary requests and for what reasons the respondent considers that this is the case.

7.5 According to the case law, non-specific references to the submissions made at first instance are generally not sufficient and will not be taken into account (Case Law, V.A.2.6.5.). The same principle applies to requests; a non-specific reference to submissions made at first instance is incompatible with the requirement of Article 12(3) RPBA (Case Law, V.A.4.3.5 b)).

7.6 Neither the other party, nor the Board can be expected to search for the respondent's arguments for eleven auxiliary requests in its first instance submissions. It should also be noted that, in the case of a non-specific reference, it remains unclear which arguments in relation to the objections raised in the statement of grounds of appeal would be pursued in the appeal proceedings.

7.7 According to Article 12(5) RPBA, the Board has the discretion not to admit a party's submissions if they do not comply with the requirements of Article 12(3) RPBA. In exercising this discretion, the Board decided not to admit auxiliary requests I to IX, Xa and Xb into the proceedings because they were not substantiated.

8. Remittal - conclusion

In view of the fact that auxiliary requests I to IX, Xa and Xb have not been admitted to the proceedings, there is nothing left to discuss and the request for remittal must be rejected.

9. Since none of the requests of the respondent is either allowable or admitted, 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