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**Datasheet for the decision
of 21 October 2024**

Case Number: T 1819/21 - 3.3.10

Application Number: 07750663.2

Publication Number: 1991688

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A61Q1/10, A61Q5/02, A61Q5/10,
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A61Q15/00, A61Q17/00,
A61Q17/04, A61Q19/04, A61Q19/10

Language of the proceedings: EN

Title of invention:
BIODEGRADABLE COMPOSITIONS COMPRISING RENEWABLY-BASED,
BIODEGRADABLE 1.3-PROPANEDIOL

Patent Proprietor:
Primient Covation LLC

Opponent:
DSM Nutritional Products AG

Headword:

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

Keyword:

Inventive step - (no)

Late-filed evidence - should have been submitted in first-
instance proceedings (yes) - admitted (no)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 1819/21 - 3.3.10

D E C I S I O N
of Technical Board of Appeal 3.3.10
of 21 October 2024

Appellant: Primient Covation LLC
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Respondent: DSM Nutritional Products AG
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 19 July 2021
revoking European patent No. 1991688 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chair R. Pérez Carlón
Members: M. Kollmannsberger
T. Bokor

Summary of Facts and Submissions

- I. The patent proprietor appealed the Opposition Division's decision to revoke the patent under Articles 101(2) and 101(3) (a) EPC.
- II. The patent relates to biodegradable compositions comprising 1,3-propanediol (in the following "PDO") derived from biological sources and their use in cosmetics and personal care products. The PDO is characterized by a certain impurity profile.
- III. The patent had been opposed under Article 100(a) EPC for lack of novelty (Article 54 EPC) and inventive step (Article 56 EPC), under Article 100(b) EPC for insufficient disclosure (Article 83 EPC), and under Article 100(c) EPC for unallowable amendments (Article 123(2) EPC). The Opposition Division concluded that the claims of the granted patent, named "request 1" in the appealed decision, added originally undisclosed subject-matter (Article 123(2) EPC), likewise the claims of requests 2-15, 17 and 25. Request 16 was found not novel over D1 (Article 54 EPC). Finally, requests 18-24 were found to comply with the provisions of Articles 123(2), 83 and 54 EPC but lacked an inventive step over D4 as closest prior art, Article 56 EPC.
- IV. The following documents are referred to in this decision:
- D1: WO2004/101479 A2
D4: JP 05-221821
D4b: Professional Translation of JP 05-221821

- D7: Wabner, The International Journal of Aromatherapy, Vol 12, No.3, Pages 142-144, 2002
- D10: Römpp, Lexikon der Chemie, 10. Auflage, Cm-G, 1997 (page 1571: Glycerin)
- D15: Declaration by James A. Zahn, dated 26.02.2016
- D19: Declaration by James A. Zahn, dated 20.08.2020
- D20: Declaration by James A. Zahn, dated 28.11.2021
- D21: Tests carried out by Christine Mendrok-Edinger, dated 07.04.2022
- D22: Database Pubchem, entry 3-Hydroxypropanal

V. The appellant requested the following:

As a main request, to maintain the patent in amended form under Article 101(3) (a) EPC based on the claim set of "request 18" underlying the appealed decision.

As auxiliary requests, to maintain the patent in amended form under Article 101(3) (a) EPC based on auxiliary requests (ARs) 1-6 filed with the grounds of appeal. AR1 is new in appeal and is an amended version of request 16 underlying the appealed decision. ARs 2-6 correspond to requests 20-24 underlying the appealed decision. The appellant further requested to admit experimental data D20 for supporting their inventive step arguments.

VI. Claim 1 of the appellant's respective main and auxiliary requests (ARs) are set out in the following. Regarding AR1 the amendments with respect to the main request are immediately apparent. Regarding ARs 2-6 the amendments are highlighted by an underscore.

Main request:

"Use of a biodegradable composition comprising 1,3-propanediol and an ingredient, wherein said 1,3-

propanediol is biologically derived and has a concentration of total organic impurities of less than 400 ppm and has a concentration of peroxides of less than 10 ppm as a personal care product or a cosmetic."

Auxiliary request 1 (AR1):

"A biodegradable personal care product or a cosmetic comprising a composition comprising 1,3-propanediol and an ingredient, wherein said 1,3-propanediol is biologically-derived, has a concentration of total organic impurities of less than 400 ppm and has a concentration of peroxides of less than 10 ppm, and wherein said personal care product or a cosmetic is selected from:

- (i) baby products wherein the concentration of said 1,3-propanediol is in the range of from 0.1 % to 25% by weight;*
- (ii) bath preparations wherein the concentration of said 1,3-propanediol is in the range of from 0.001% to 50%;*
- (iii) eye makeup preparations wherein the concentration of said 1,3-propanediol is in the range of from 0.001% to 75%;*
- (iv) fragrance preparations wherein the concentration of said 1,3-propanediol is in the range of from 0.01 % to 10%;*
- (v) hair preparations (noncoloring) wherein the concentration of said 1,3-propanediol is in the range of from 0.01 % to 50%;*
- (vi) hair coloring preparations wherein the concentration of said 1,3-propanediol is in the range of 0.001 % to 50%;*

- (vii) makeup preparations (not eye) wherein the concentration of said 1,3-propanediol is in the range of from 0.01% to 25%;
- (viii) manicuring preparations wherein the concentration of said 1,3-propanediol is in the range of from 0.001% to 50%;
- (ix) oral hygiene products wherein the concentration of said 1,3-propanediol is in the range of from 0.001% to 80%;
- (x) personal cleanliness products wherein the concentration of said 1,3-propanediol is in the range of from 0.01 % to 50%;
- (xi) shaving preparations wherein the concentration of said 1,3-propanediol is in the range of from 0.001 % to 50%;
- (xii) skin care preparations (creams, lotions, powder, and sprays) wherein the concentration of said 1,3-propanediol is in the range of from 0.001 % to 50%; and
- (xiii) suntan preparations wherein the concentration of said 1,3-propanediol is in the range of from 0.001 % to 25%."

Auxiliary request 2 (AR2):

"Use of a biodegradable composition comprising 1,3-propanediol and an ingredient, wherein said 1,3-propanediol is biologically derived, is biologically produced through a fermentation process, has a concentration of total organic impurities of less than 400 ppm and has a concentration of peroxides of less than 10 ppm and wherein the ingredient is selected from the group consisting of an acceptable carrier, an active, water, an aqueous solution, a surfactant, a builder, a pH control agent, a corrosion inhibitor, a defoamer, a dye and a food ingredient as a personal care product or a cosmetic."

Auxiliary request 3 (AR3):

"Use of a biodegradable composition comprising 1,3-propanediol and an ingredient, wherein said 1,3-propanediol is biologically derived, is biologically produced through a fermentation process, has a concentration of total organic impurities of less than 400 ppm, has a concentration of peroxides of less than 10 ppm and has an ultraviolet absorption at 220 nm of less than about 0.200 and at 250 nm of less than about 0.075 and at 275 nm of less than about 0.075 and wherein the ingredient is selected from the group consisting of an acceptable carrier, an active, water, an aqueous solution, a surfactant, a builder, a pH control agent, a corrosion inhibitor, a defoamer, a dye and a food ingredient as a personal care product or a cosmetic."

Auxiliary request 4 (AR4):

"Use of a biodegradable composition comprising 1,3-propanediol and an ingredient, wherein said 1,3-propanediol is biologically derived, is biologically produced through a fermentation process, has a concentration of total organic impurities of less than 400 ppm, has a concentration of peroxides of less than 10 ppm, has an ultraviolet absorption at 220 nm of less than about 0.200 and at 250 nm of less than about 0.075 and at 275 nm of less than about 0.050 and has a "b" color value of less than about 0.15 and wherein the ingredient is selected from the group consisting of an acceptable carrier, an active, water, an aqueous solution, a surfactant, a builder, a pH control agent, a corrosion inhibitor, a defoamer, a dye and a food ingredient as a personal care product or a cosmetic."

Auxiliary request 5 (AR5):

"Use of a biodegradable composition comprising 1,3-propanediol and an ingredient, wherein said 1,3-propanediol is biologically derived, is biologically produced through a fermentation process, has a concentration of total organic impurities of less than 400 ppm, has a concentration of peroxides of less than 10 ppm, has a concentration of carbonyl groups of less than about 10 ppm, has an ultraviolet absorption at 220 nm of less than about 0.200 and at 250 nm of less than about 0.075 and at 275 nm of less than about 0.050 and has a "b" color value of less than about 0.15 and wherein the ingredient is selected from the group consisting of an acceptable carrier, an active, water, an aqueous solution, a surfactant, a builder, a pH control agent, a corrosion inhibitor, a defoamer, a dye and a food ingredient as a personal care product or a cosmetic."

Auxiliary request 6 (AR6):

"Use of a biodegradable composition comprising 1,3-propanediol and an ingredient, wherein said 1,3-propanediol is biologically derived, is biologically produced through a fermentation process, has an anthropogenic CO₂ emission profile of zero upon biodegradation, has a concentration of total organic impurities of less than 400 ppm, has a concentration of peroxides of less than 10 ppm, has a concentration of carbonyl groups of less than about 10 ppm, has an ultraviolet absorption at 220 nm of less than about 0.200 and at 250 nm of less than about 0.075 and at 275 nm of less than about 0.050 and has a "b" color value of less than about 0.15 and wherein the ingredient is selected from the group consisting of an

acceptable carrier, an active, water, an aqueous solution, a surfactant, a builder, a pH control agent, a corrosion inhibitor, a defoamer, a dye and a food ingredient as a personal care product or a cosmetic."

VII. The appellant reasoned its requests essentially as follows:

The Opposition Division had erred in its finding that the use defined in claim 1 of the main request now defended in appeal was obvious over D4 as closest prior art. In particular, the division failed to recognize that adhering to the maximum amounts of impurity levels of the PDO defined in this claim lead to unexpected reduction of skin irritation during the claimed use. Such an improvement was not foreshadowed in any of the secondary references cited. Moreover, the main secondary document cited, D1, would not have been considered by a skilled person since it related to a different technical field. In any case, even if a skilled person had considered this document in the context of a proper problem-solution-approach, it would not have arrived at the use defined in the claim. The claims of the main request also complied with the other relevant provisions for maintenance of the patent in amended form. The same applied for the claims of the auxiliary requests.

The expert declaration and the experimental data compiled in D20 should be admitted into the appeal proceedings under Article 12(4)(6) RPBA. These data reinforced what was stated in the patent and what was already shown in D15 and D19. There was no reason to file this data already during opposition proceedings.

- VIII. The respondent (opponent) requested the appeal to be dismissed. It requested D20 not to be admitted into the appeal proceedings and, should D20 be admitted, it requested new counter-evidence D21 and D22 likewise to be admitted. Moreover, it requested AR1 not to be admitted into the appeal proceedings.
- IX. The respondent submitted essentially that the Opposition Division's findings on inventive step were correct for all requests now pending. Moreover, claim 1 of the appellant's main request was the result of amendments unallowable under Article 123(2) EPC. The Opposition Division thus correctly revoked the patent. New AR1 should have been submitted already during opposition proceedings and should not be admitted under Article 12(6) RPBA. The same held for D20.
- X. Oral proceedings were held on 23 October 2024 in the presence of both parties. The decision was announced at the end of the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.
2. Admittance of D20-D22 into the appeal proceedings
 - 2.1 D20 is an experimental report filed by the appellant together with its grounds of appeal. Since this report was not underlying the decision, it is an amendment to the appellant's case under Article 12(4) RPBA and its admission is at the discretion of the Board.
 - 2.2 The respondent requested the non-admittance of D20, arguing i.a. that it should have been submitted during

opposition proceedings, Article 12(6), second sentence, RPBA.

2.3 The report is intended to illustrate the effects of the concentration of impurities contained in the PDO for which upper limits are defined in claim 1.

2.4 It is undisputed that experimental reports illustrating the effect of adhering or not to these limits were provided during opposition proceedings, namely D15 and D19. The Opposition Division addressed these reports in its annex to the summons for oral proceedings, see points 13.6 and 13.7 there. The division concluded that these reports were not suitable to establish an effect caused by the concentration limits defined in the claim.

2.5 The annex to the summons was issued on 10 December 2020. Oral proceedings were held on 22 June 2021, i. e. more than six months later. Thus, if the patent proprietor wished to carry out additional experiments to counter the Opposition Division's preliminary opinion, this should have been clearly done still in the opposition proceedings, after having received it.

2.6 The appellant submitted that D20 was filed to refute the Opposition Division's erroneous conclusion on the concentration limits defined in claim 1. Contrary to what the Opposition Division found, both the upper limits of peroxides and total organic impurities were important to achieve a reduction of skin irritation and sensitivity. This was already stated in the patent itself, and confirmed by D15 and D19. The patent proprietor could have reasonably expected that the Opposition Division accepted these evident facts during

the oral proceedings before it, and that it would have realized that its preliminary opinion as set out in the annex to the summons was wrong. Thus, there had not been any need to file such data as a reply to the annex to the summons for oral proceedings.

- 2.7 This argument is not convincing. The Opposition Division's position on the relevance of the concentration limits in the claims was clearly set out in the annex to the summons, see above, and is repeated in point 20.5 of its decision. If the patent proprietor considered this position to be erroneous, any further experimental data the appellant wished to submit in order to address this issue should thus have been filed at the latest as a reply to the annex to the summons for oral proceedings. It is the intention behind Article 12(6) RPBA, second sentence, to avoid issues being raised for the first time before the Boards of Appeal that could have been easily dealt with by the Opposition Division, had they been raised in due time.
- 2.8 Thus the Board decides not to admit D20 into the appeal proceedings. The respondent's conditional request to admit D21 and D22 is therefore also refused.
3. Inventive step (Article 56 EPC) regarding claim 1 of the main request in appeal
- 3.1 This claim is directed to the cosmetic use of compositions comprising biologically derived PDO. The PDO is characterized by having *"a concentration of total organic impurities of less than 400 ppm"* and *"a concentration of peroxides of less than 10 ppm"*.
- 3.2 The Opposition Division defined D4 as the document representing the closest prior art. The Board refers to

the translation filed as D4b. D4 discloses the use of PDO in cosmetic compositions and emphasises its moisturizing properties. PDO may be obtained, among other possibilities, by fermentation from glycerol (glycerin), see paragraph [0005].

The choice of D4 as closest prior art was undisputed.

3.3 The Opposition Division considered the claimed use to differ from the disclosure of D4 by the amounts of impurities defined in the claim. D4 is silent on the amounts of impurities present. The appellant furthermore considered the biological origin of the PDO not to be disclosed in D4. Paragraph [0005] of D4 mentioned fermentation processes starting from glycerin, but glycerin was not necessarily of biological origin.

3.4 The Opposition Division (see point 20.3 of the contested decision) held only the concentrations of the impurities to be distinguishing features. It held the reduction of the peroxide concentration to be obvious to a skilled person, since the skin irritant properties of peroxides are known; the division referred to D7 and D10. For the defined amount of total organic impurities no particular effect was considered proven. However, the reduction of impurities was anyway considered to be a normal design option for a skilled person, all the more as PDO derived from biological sources and showing the impurity profile as claimed was known from D1.

3.5 The appellant contested this finding in various ways.

3.5.1 Firstly, D4 only addressed the moisturizing properties of PDO and did not address skin irritation. Thus, D4 treated a different technical problem.

- 3.5.2 Secondly, it had been established that the adherence to the levels defined in the claim for peroxides as well as total organic impurities led to a reduction of skin irritation. The objective technical problem to be solved would thus have to relate to the reduction of skin irritation. A correct application of the problem-solution-approach would then have to answer the question of whether a skilled person would have reduced the level of peroxides *and* the level of total organic impurities to below the levels defined in the claim *in the expectation of reducing skin irritation*. However, none of the secondary references cited disclosed any influence of the level of total organic impurities on skin irritation.
- 3.5.3 Thirdly, D1 was unrelated to the claimed invention. D1 dealt with PDO as a raw material for polymer synthesis and the purity levels defined therein would have been read by a skilled person in that context.
- 3.5.4 In summary, the conclusion that a skilled person would have used the compositions according to the claim for cosmetic purposes was based on hindsight rather than on the teaching of the prior art.
- 3.6 The respondent essentially defended the reasoning in the appealed decision. It pointed out that purified PDO was known at least from D1 and could have been used by a skilled person. In any case, the level of total organic impurities defined in the claim could not have had any influence on the skin irritation properties, since that definition also covered clearly non-irritating impurities such as glycerol.

- 3.7 The Board concurs with the Opposition Division in that the use of the compositions defined in claim 1 as cosmetics or as personal care products lacks an inventive step, for the following reasons:
- 3.7.1 The use of PDO, possibly originating from a fermentation process, in cosmetic compositions is known from D4. D4's main point is to emphasise the moisturizing properties of PDO compared to other widely used alcohols. However, it is clear to a skilled person that components of skin moisturizing compositions should not have skin irritating properties. Thus, the Board does not accept that the disclosure of D4 relates to a fundamentally different technical problem as the one defined by the appellant.
- 3.7.2 The parties disagreed whether the level of total organic impurities defined in the claim had an influence on skin irritant properties of the resulting compositions or not. For the sake of argument, in the appellant's favour the Board assumes that this is the case. It is thus assumed that adhering to peroxide levels as well as to the level of total organic impurities as defined in the claim reduces skin irritation when using the corresponding compositions for personal care or cosmetic purposes.
- 3.7.3 Thus, starting from D4 the technical problem to be solved can be formulated as the provision of compositions for use as a personal care product or a cosmetic which lead to a reduction of skin irritation when compared to those of D4, using "conventional" PDO as an ingredient. This corresponds to the objective technical problem as defined by the appellant.

- 3.7.4 It is undisputed that D1 discloses biologically derived PDO in the purity levels defined in the claim.

The question to be answered is thus whether a skilled person would have used this PDO as an ingredient for the cosmetic compositions disclosed in D4, in the expectation of obtaining favourable properties with respect to skin irritation. If yes, the skilled person would have automatically ended up with compositions according to the claim.

- 3.7.5 D4 itself does not impose any restriction as to the nature of the PDO that can be used for the cosmetic compositions disclosed therein. According to paragraph [0005], the PDO may be obtained by various chemical synthesis routes or by fermentation from glycerin.

- 3.7.6 D1 deals with purification of Bio-PDO, obtained by fermentation from biological sources, as already apparent from the abstract. The result of this process is a biologically derived PDO having low levels of organic impurities, such as peroxides or carbonyl compounds, see example 9 on pages 40 and 41. The levels of peroxides as well as the level of total organic impurities are well within the claimed limits, see first paragraph on page 5.

Admittedly, D1 is mainly concerned with the use of PDO as a raw material for polymer synthesis, and discusses the negative impact of organic impurities in this context, see page 1 lines 30-35. However, that PDO can be used in cosmetics is known already from D4. A skilled person would have immediately recognised that the PDO prepared in D1 is interesting for cosmetic use, since it is described as having a particularly low

level of impurities known to cause skin irritation, such as peroxides or carbonyl compounds.

- 3.7.7 The appellant submitted that D4 did not mention any problems with skin irritation caused by the PDO or impurities contained therein. Thus, a skilled person would have had no reason look for a PDO with a reduced level of peroxides and other organic impurities.

However, if the skilled person finds themselves in the situation of having to find a solution to the technical problem defined above, it will look at D1 since it deals with the purification of the compound in D4.

- 3.7.8 Peroxides, and also other impurities such as carbonyl compounds, are known to be skin irritating compounds. The appellant criticized the relevance of D7 and D10 and argued that these documents would have been considered, if at all, at most with hindsight. However, these documents are cited only to illustrate the well-known fact that peroxides are recognized as skin irritants and allergens, see first column of D7. When trying to solve the objective technical problem defined above the skilled person, starting from D4, would have looked for possibilities to reduce skin irritation. The skilled person would have considered the PDO described in D1 as useful since it is described as having a particularly low level of impurities known to cause skin irritation. In doing so, the skilled person would have arrived automatically at the use defined in claim 1, i. e. at the use of biologically derived PDO complying with the maximum levels of peroxides and total organic impurities defined in the claim, for the cosmetic and personal care purposes disclosed in D4.

3.7.9 Reducing the amount of harmful impurities in components of cosmetic compositions is something a skilled person would always strive for. The Board considers that the use of known raw materials in a known purified form for preparing known cosmetic compositions cannot have any inventive merit.

3.7.10 In summary, the skilled person, starting from D4 and trying to obtain compositions having low skin irritation potential, would have used the PDO described in D1 as a raw material for the compositions described in D4.

4. Inventive step, auxiliary requests

4.1 AR1

The appellant submitted that the claims of AR1 are inventive for the same reasons as the claims of the main request. Cosmetic applications as defined in points (i) to (xii) are entirely conventional and are also disclosed in D4, see e. g. the examples in [0019] to [0021]. Since the Board considers the main request to lack inventive step also the claims of AR1 lack inventive step.

Thus, regardless of the question of whether AR1 should be admitted to appeal proceedings, the patent cannot be maintained on the basis of this request.

4.2 AR2 to AR6

The additional ingredients defined in AR2 are known from D4 and the additional parameters characterizing the PDO in auxiliary requests AR3 to AR6 are all disclosed in D1.

During oral proceedings before the Board the appellant stated that the inventive step arguments for the auxiliary requests were essentially the same as for the main request. Thus, the claims of these requests lack an inventive step for the same reasons as claim 1 of the main request.

5. Absent any allowable request, the appeal of the patent proprietor must fail, and the Board confirms the decision to revoke the patent.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



C. Rodríguez Rodríguez

R. Pérez Carlón

Decision electronically authenticated