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**Datasheet for the decision
of 7 February 2023**

Case Number: T 0290/20 - 3.3.10

Application Number: 14758971.7

Publication Number: 3044202

IPC: C07C227/18, C07C227/36,
C07C229/16

Language of the proceedings: EN

Title of invention:

MIXTURES OF ENANTIOMERS, AND PROCESS FOR MAKING SUCH MIXTURES

Patent Proprietor:

BASF SE

Opponent:

Nouryon Chemicals International B.V.

Headword:

Relevant legal provisions:

EPC Art. 56

RPBA 2020 Art. 12(3), 12(4), 12(6)

Keyword:

Auxiliary request 4 - Inventive step - (no)
Auxiliary request 5 - Admissibility - (yes)
Auxiliary request 5 - Inventive step - (yes)
Amendment to case - change in case during oral proceedings
before the opposition division
Admission of document not admitted by the opposition division
- justified reaction of opponent - admitted (yes)

Decisions cited:

Catchword:



Beschwerdekammern

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Case Number: T 0290/20 - 3.3.10

D E C I S I O N
of Technical Board of Appeal 3.3.10
of 7 February 2023

Appellant: BASF SE
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
2 December 2019 concerning maintenance of the
European Patent No. 3044202 in amended form.**

Composition of the Board:

Chairman P. Gryczka
Members: A. Zellner
T. Bokor

Summary of Facts and Submissions

- I. The appeals of the opponent and the proprietor of the patent lie from the decision of the opposition division maintaining the European Patent No. 3 044 202 in amended form under Article 101(3) (a) EPC.
- II. Notice of opposition had been filed on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC).
- III. Reference is made to the following documents, relevant to the present decision:
- D2: WO 2012/150155 A1
D6: WO 2012/136474 A1
Experimental report IV, filed by the opponent on 11 October 2019
- IV. In its decision, the opposition division came to the conclusion that the subject-matter claimed in the patent as granted (main request) as well as in auxiliary requests 1 and 2 was novel (Article 54 EPC), but was not based on an inventive step (Article 56 EPC). Auxiliary request 3 was considered not to meet the requirements of Article 123(3) EPC. The opposition division considered the subject-matter claimed in auxiliary request 4 to be novel in view of the disclosure of document D1, and to be based on an inventive step in view of document D2 as closest prior art (Articles 54 and 56 EPC). The experimental report IV was admitted into the proceedings, document D6 was not admitted.

V. Both parties appealed this decision.

According to the appellant proprietor (hereinafter the proprietor), the opposition division erred in their decision when holding the subject-matter of claim 1 of the main request and the auxiliary requests 1 and 2 to lack an inventive step (Article 56 EPC).

According to the appellant opponent (hereinafter the opponent), the opposition division erred in their decision when holding the subject-matter of claim 1 of the auxiliary request 4 to be novel and to be based on an inventive step (Articles 54 and 56 EPC). According to the opponent, the decision not to admit document D6 was also erroneous.

VI. In a communication under Article 15(1) RPBA the board informed the parties of its preliminary opinion on the issues to be discussed during the oral proceedings.

VII. Oral proceedings were held on 7 February 2023.

VIII. The proprietor withdrew its main request (patent as granted) and auxiliary requests 1 and 2 during the oral proceedings before the board. Auxiliary 3 pending before the opposition division was not filed on appeal. Hence, only auxiliary request 4 filed during the opposition proceedings and auxiliary request 5 filed before the board with letter dated 27 August 2020 are relevant for this decision.

IX. Auxiliary request 4 has one independent claim, which reads as follows:

"1. Process for making a mixture of L- and D-enantiomers of methyl glycine diacetic acid (MGDA) or

its respective mono-, di or trialkali metal or mono-, di- or triammonium salts, said mixture containing predominantly the respective L-isomer with an enantiomeric excess (ee) in the range of from 10 to 75% or a 40 to 60% by weight aqueous solution thereof, wherein said process comprises the steps of

- (a) dissolving a mixture of L-alanine and its alkali metal salt in water,*
- (b) converting said mixture of L-alanine and its alkali metal salt with formaldehyde and hydrocyanic acid or alkali metal cyanide to a dinitrile,*
- (c) saponification of the dinitrile resulting from step (b) in two steps (c1) and (c2) at different temperatures, employing stoichiometric amounts of hydroxide or an excess of 1.01 to 1.5 moles of hydroxide per molar sum of COOH groups and nitrile groups of the dinitrile from step (b)."*

X. Auxiliary request 5 differs from auxiliary request 4 in that the features of dependent claim 9 of the patent as granted have been added to claim 1, which thus contains the following additional features:

"... and wherein step (c1) is carried out at a temperature in the range of from 20 to 80°C and step (c2) is carried out at a temperature in the range of from 175 to 195 °C."

XI. The opponent's arguments, as far as they are relevant for this decision, can be summarised as follows:

Document D6 should be admitted into the proceedings. It was already filed during the opposition proceedings as a direct and timely response to the filing of auxiliary request 4 by the proprietor shortly before the date of

the oral proceedings before the opposition division. The document is *prima facie* relevant for the question of inventive step of the subject-matter of auxiliary request 4.

The process according to claim 1 of auxiliary request 4 does not involve an inventive step. Document D6 is the closest prior art. The difference between the claimed process and the disclosure of that document, in particular example 10 thereof, is the enantiomeric excess of predominantly L-MGDA in the product mixture. This feature, however, is already obvious for the skilled person from the disclosure of document D6 itself, since it discloses advantageous effects when using the L-enantiomer as compared to using the racemic mixture. Even if document D2 were considered closest prior art, inventive step could not be acknowledged. The differing feature of the use of an alkali metal salt of alanine in addition to alanine is known from document D6. Since no technical effect was shown for this feature, the resulting technical problem is the provision of an alternative process, and the solution proposed in claim 1 is obvious.

Auxiliary request 5 should not be admitted into the proceedings, since it should have been filed earlier. The request is furthermore not allowable because the provision of the claimed process does not involve an inventive step in view of document D2 as closest prior art. The differing feature as such, *i.e.* the temperature (c.2) in the range of from 175 to 195°C of the saponification step of the claimed process, does not lead to a particular technical effect on its own and the resulting objective technical problem of providing an alternative to the process disclosed in document D2 is solved in an obvious way in view of the

technical teaching of document D6, which suggests a temperature of at least 90°C for that step.

XII. The proprietor's arguments, as far as they are relevant for this decision, can be summarised as follows:

Document D6 should not be admitted into the proceedings. It was, as already elucidated by the opposition division, not *prima facie* relevant and should have been filed earlier in the proceedings.

The process according to claim 1 of auxiliary request 4 is inventive in view of document D2 as closest prior art. The skilled person would not have considered the technical teaching of document D6, because that document was mainly directed at providing a process for the preparation of MGDA with a low amount of toxic by-products.

Auxiliary request 5 is a direct response to the admittance of document D6 and should thus also be admitted into the proceedings. The request relates to an inventive process considering document D2 as closest prior art. Table 2 of the contested patent shows that the differing feature of a higher temperature in the second saponification step leads to the technical effect of producing a mixture of L- and D-enantiomers of MGDA in a particular enantiomeric excess. Since this effect was not known to be caused by the differing feature, the provision of the claimed process including that feature is not obvious.

XIII. The parties final requests are as follows:

The appellant proprietor requests that the decision under appeal be set aside and that the patent be

maintained on the basis of auxiliary requests 4 or 5, where auxiliary request 4 was filed before the opposition division and auxiliary request 5 was filed before the board with letter dated 27 August 2020.

The appellant opponent requests that the decision under appeal be set aside and that the patent be revoked. They also request not to admit auxiliary request 5.

Reasons for the Decision

Admissibility in the proceedings of experimental report IV and document D6

1. Experimental report IV

The experimental report IV had been filed by the opponent during the opposition proceedings on 11 October 2019. The opposition division admitted the document and referred to its content in the contested decision for the evaluation of inventive step of the main request as well as auxiliary requests 1 and 2. The report is thus part of the proceedings, as decided by the board in the oral proceedings. Although the parties relied on the content of the report during the appeal proceedings, no arguments were based on the report concerning the auxiliary requests 4 and 5, which are the only requests relevant for this decision (see point VIII.).

2. Document D6

2.1 Document D6 had been filed by the opponent during the opposition proceedings on 11 October 2019, *i.e.* after the date set by the opposition division under Rule 116 EPC and less than four weeks before the date of the

oral proceedings before the opposition division. The opponent requested that the document be admitted into the proceedings and argued that it had been filed in reaction to the proprietor's late filing of auxiliary request 4. The opponent based their objection of lack of inventive step of the process according to claim 1 of auxiliary request 4 on the technical teaching of document D6. The opposition division was not convinced by the opponent's arguments and decided not to admit the document (see page 5 of the impugned decision). According to the opposition division claim 1 of auxiliary request 4 was identical to claim 8 of the patent as granted, so that the document could have been filed earlier. Furthermore document D6 was not novelty-destroying, and thus not more relevant than other documents already in the proceedings. The opponent filed the document again with the statement setting out the grounds of appeal and requested its admittance.

- 2.2 According to Article 12(6) RPBA the board shall not admit evidence which was not admitted in the proceedings leading to the decision under appeal, unless the decision not to admit them suffered from an error in the use of discretion or unless the circumstances of the appeal case justify their admittance.
- 2.3 The board admits document D6 into proceedings, because the circumstances of the appeal case justify its admittance for the following reasons:
- 2.4 In their decision, the opposition division acknowledged the presence of an inventive step of the process according to claim 1 of auxiliary request 4 (see pages 14 to 16 of the impugned decision). They selected document D2 as closest prior art, and identified two

differing features between the claimed process and the process disclosed in lines 22 to 36 of page 4 of D2. One difference was seen in that the process according to claim 1 required "... *dissolving a mixture of L-alanine **and its alkali salt** ...*" (emphasis added by the board) before converting the dissolved mixture to a dinitrile, whereas in the process according to D2 only alanine was used, but not its alkali salt. The opposition division argued that this feature led to a particular technical effect, *i.e.* it allowed for a higher concentration of L-alanine in water. According to the opposition division, the technical problem to be solved could thus be seen in the provision of an improved process for the preparation of highly concentrated aqueous solutions of mixtures of L- and D-enantiomers of MGDA or salts thereof. Since the use of the combination of L-alanine and its alkali salt led to a technical effect, and the link between this effect and the differing feature was neither disclosed nor suggested in the prior art, the presence of an inventive step was acknowledged.

The opposition division thus acknowledged the presence of an inventive step based on the differing feature of the additional use of an alkali salt of L-alanine, and in view of the technical effect caused by this feature.

- 2.5 The opponent submitted that this feature and its technical effect was discussed for the first time during the oral proceedings, whereas the submissions before the date of the oral proceedings were focused on the product claims. The opponent furthermore submitted that claim 1 of the auxiliary request 4, however, related to a process for making a mixture of L- and D-MGDA, but not to the mixture as such. The contested patent did also not suggest that the process for the

preparation of the mixture of L- and D-MGDA - with particular emphasis on the differing feature as identified in the decision of the opposition division - was at the core of the invention. This was not disputed by the proprietor.

2.6 The board comes to the conclusion that the filing of auxiliary request 4 shortly before the date of the oral proceedings before the opposition division, and the arguments brought forward by the proprietor in support of inventive step of claim 1 of that request, represents a change in the course of the opposition proceedings, which justifies the filing of a new document as a reaction by the opponent.

2.7 Document D6 discloses the differing feature identified by the opposition division and addresses the influence of the alkali metal salts of alanine on its solubility (see page 3, lines 22 to 30 and page 6, lines 1 to 7). The document also explicitly discloses a method for producing aqueous solutions of the sodium salt of MGDA, which comprises a step wherein L-alanine is partially neutralised - and is thus partly converted into an alkali metal salt - before it is further converted to the corresponding dinitrile compound (see example 10 with reference to example 8 and comparative examples 7 and 4). Document D6 thus addresses the feature under consideration, as well as a technical effect associated therewith.

2.8 Document D6 has been filed by the opponent during the opposition proceedings as a direct reply to the change of the course of the proceedings at the earliest occasion. After the decision of the opposition division not to admit the document into the proceedings, the opponent re-filed the document at the earliest

opportunity, *i.e.* at the beginning of the appeal proceedings, together with the statement setting out its grounds of appeal.

2.9 The proprietor argued that the document and the arguments based thereon should have been filed earlier, *i.e.* even before the filing of auxiliary request 4, since the subject-matter of claim 1 of auxiliary request 4, which prompted the opponent to initially file the document, was already present in claim 8 of the patent as granted. The claimed process could thus have been attacked at an earlier stage of the proceedings.

2.10 This argument is not convincing.

It is correct that the process according to claim 1 of auxiliary request 4 is identical to claim 8 - being dependent on claims 3 and 1 - of the patent as granted, and is only reworded as independent claim. The filing of auxiliary request 4, however, which comprises the process claim as the sole independent claim, represents a change in the course of the proceedings, as outlined above, and as such justifies the admittance of the document.

2.11 The proprietor also argued that the opponent could have expected the limitation of the claimed subject-matter to a method claim.

2.12 This argument is also not convincing.

Neither the content of the patent as granted, nor the course of the proceedings up to the filing of auxiliary request 4 shortly before the date of the oral proceedings before the opposition division could have

led the opponent to expect the proprietor defending the contested patent in the form of a request containing a single independent claim directed to a process for making an enantiomeric mixture of L- and D-enantiomers of methyl glycine diacetic acid (MGDA) or specific salts thereof.

2.13 The proprietor further argued that the document was not *prima facie* relevant, because the document, in particular example 10, did not - as already confirmed by the opposition division - destroy novelty of the claimed process.

2.14 The board is not convinced by this argument either.

Document D6 discloses, in the same context as the contested patent, the feature relied upon by the opposition division in their decision on inventive step, and its relation to the technical effect on which the opposition division based their argument. It is therefore *prima facie* relevant.

2.15 Document D6 is thus admitted into the proceedings (Article 12(6) RPBA).

Auxiliary request 4 - inventive step (Articles 100(a) and 56 EPC)

3. The opposition division considered the provision of a process according to claim 1 of auxiliary request 4 to be based on an inventive step, starting from the disclosure of document D2 as closest prior art. The division considered the use of an alkali metal salt, in addition to alanine as starting material for the reaction with formaldehyde and hydrocyanic acid, to be one of two differing features. The resulting technical

problem was seen in the provision of an improved process for the preparation of highly concentrated aqueous solutions of mixtures of L- and D-enantiomers of MGDA, or salts thereof. Since the use of a mixture of alanine and an alkali metal salt thereof was not suggested in the prior art, inventive step was acknowledged (Article 56 EPC).

4. For the following reasons, the board comes to the conclusion that the provision of a process according to claim 1 of auxiliary request 4 does not involve an inventive step:

Closest prior art

5. The patent under dispute relates to a process for the preparation of mixtures of L- and D-enantiomers of MGDA, or certain salts thereof. It addresses the difficulty of providing highly concentrated solutions of these chelating agents, which can be used as laundry detergents and dishwashing formulations (see the paragraphs [0002], [0004] and [0012] of the contested patent). The parties disagreed as to which of documents D2 and D6 represented the closest prior art, the proprietor arguing in favour of document D2, the opponent in favour of document D6.
6. The board concludes that document D2 is more related to the process according to claim 1 of auxiliary request 4, and to the problem the contested patent aims to solve, than D6. It thus qualifies as closest prior art.

The document discloses in lines 22 to 36 of page 4 a process for the preparation of a mixture of the trisodium salts of the L- and D-enantiomers of MGDA, and of L-MGDA, whereas document D6 aims at providing a

pure enantiomer starting from enantiomerically pure α -alanine (see in particular page 7, lines 15 to 31 and example 10). Document D2 does not disclose an enantiomeric excess according to claim 1 of auxiliary request 4. Document D6, however, does not disclose any mixture of L- and D-enantiomers at all. It does thus not disclose a process for the preparation of a mixture of L- and D-enantiomers of MGDA. Document D6 furthermore aims at providing a process leading to fewer toxic by-products, in particular NTA (see page 2, lines 19 to 24 and example 10), whereas document D2 mainly addresses the problem of providing a technically simple process (see the lines 39 to 40 on page 1).

Document D2 is thus a more suitable starting point for the evaluation of inventive step.

Differing features

7. The process disclosed in lines 22 to 36 of page 4 of document D2 comprises the steps of dissolving α -alanine in water, reacting the dissolved D,L- α -alanine or L- α -alanine with formaldehyde and hydrocyanic acid, and treating the resulting solution with sodium hydroxide solution to obtain the corresponding MGDA- Na_3 salts.
8. The process according to claim 1 of auxiliary request 4 differs from this process firstly in that MGDA is prepared in the form of a mixture of its L- and D-enantiomers with an enantiomeric excess of the L-enantiomer which is *"in the range of from 10 to 75%"*, whereas D2 discloses either the preparation of a racemic mixture of D- and L-MGDA- Na_3 , or of its enantiomerically pure L-form. Although lines 34 to 39 of page 3 of document D2 do not disclose a racemic mixture of D- and L-MGDA, as argued by the proprietor,

such a mixture is disclosed in the example according to page 4, lines 22 to 36.

9. A second difference is that a mixture of L-alanine and its alkali metal salt is used in step (a) of the claimed process, rather than alanine alone as in the process according to document D2.

This was not disputed.

Technical effect and objective technical problem

10. The parties agreed that the first differing feature, *i.e.* the preparation of an enantiomeric mixture rather than the racemate or the L-enantiomer, does not lead to a particular technical effect, and also that this difference does not contribute to inventive step.

During the appeal proceedings, the proprietor did not rely on any technical effect caused by the second differing feature. The opponent argued that the contested patent did not disclose the effect relied upon by the opposition division, *i.e.* to obtain a higher concentration of L-alanine in water (see the last three paragraphs on page 15 of the contested decision), and that such an effect was also not deducible from the patent application.

11. The board concurs with the opponent. The description of the contested patent does not refer to any technical effect caused by the use of an alkali metal salt of alanine in addition to alanine itself in step a) of the claimed process.
12. The objective technical problem can thus only be seen in the provision of an alternative process for making a

mixture of L- and D-enantiomers of methyl glycine diacetic acid (MGDA) or its respective mono-, di- or trialkali metal or mono-, di- or triammonium salts.

Solution to the technical problem

13. The board is satisfied that the claimed process, wherein a solution of a mixture of L-alanine and its alkali metal salt is prepared in a first step before the conversion to the corresponding dinitrile, provides the skilled person with an alternative to the process disclosed in document D2.

This was not disputed.

Obviousness of the claimed solution

14. Document D6 concerns a method for producing aqueous solutions of trialkali salts of MGDA, and refers to the use of these compounds in the field of cleaning compositions (see page 1, lines 1 to 26). The skilled person can thus be expected to consider this document when searching for a solution to the technical problem defined above.
15. The process disclosed in D6 comprises the steps of partial neutralisation of an aqueous solution of α -alanine, converting the resulting solution with formaldehyde and hydrocyanic acid to the corresponding dinitrile (Strecker-synthesis), and subsequent saponification (see the lines 26 to 41 of page 2, example 10 and claim 1). The partial neutralisation is preferably performed with sodium or potassium hydroxide, or their mixture (lines 1 to 3 of page 6).

16. Partial neutralisation of an aqueous solution of α -alanine with sodium or potassium hydroxide leads to the formation of an aqueous solution of α -alanine and its alkali metal salt. The use of an aqueous solution of a mixture of alanine and its alkali metal salt in a process for the preparation of MGDA via Strecker-synthesis is thus known from document D6.
17. The skilled person therefore finds in document D6 a solution to the objective technical problem of providing an alternative process for making a mixture of L- and D-enantiomers of methyl glycine diacetic acid (MGDA) or salts thereof, the solution being the use of an aqueous solution of a mixture of alanine and its alkali metal salt, rather than alanine on its own.
18. Furthermore, document D6 discloses that the partial neutralisation of α -alanine in an initial step to form an alkali metal salt of α -alanine leads to a higher concentration of alanine in the aqueous solution and thus to an increase in the time-volume yield, which corresponds to an improved overall process. This teaching provides the skilled person with an additional incentive to apply the technical teaching as disclosed in document D6 in order to solve the technical problem.
19. Thus the provision of a process according to claim 1 of auxiliary request 4 does not involve an inventive step (Article 56 EPC).
20. The proprietor submitted that the skilled person, in order to find a solution for the objective technical problem, would not have considered the teaching of document D6. They argued that the document aimed at solving a different technical problem, namely the provision of a process for preparing MGDA with a low

content of toxic by-products.

21. This argument is not convincing.

Although document D6 aims at providing a process wherein the amount of toxic by-products, in particular NTA, is reduced, the prospect of an improved process provides the skilled person with sufficient incentive to adapt the process according to the closest prior art by implementing a partial neutralisation step of alanine, in particular since the technical problem was merely the provision of an alternative process.

22. Since auxiliary request 4 does not meet the requirements of Article 56 EPC, the request is not allowable.

Auxiliary request 5

Admittance

23. Auxiliary request 5 was submitted and its admittance requested by the proprietor with its response to the opponent's statement setting out its grounds of appeal. The opponent requested not to admit the request.
24. Auxiliary request 5 differs from auxiliary request 4 in that claim 1 contains additional features specifying the temperatures of steps (c1) and (c2) of the saponification reaction.
25. According to the proprietor, the additional features have been added in order to overcome the objection of lack of inventive step in view of the technical teaching of document D6. Since this document had only been admitted into the proceedings during the appeal,

auxiliary request 5 was a legitimate response thereto. It had also been filed as early as possible. According to the proprietor, the request furthermore resolved all outstanding issues.

26. The board admits, for the following reasons, auxiliary request 5 into the proceedings:

The request has been filed by the proprietor in reply to the opponent's grounds of appeal (Article 12(3) RPBA). In the opponent's grounds, admittance of document D6 has been requested. The opponent based arguments on lack of inventive step of the subject-matter of auxiliary request 4 on this document. The proprietor provided reasons for submitting the new request in the appeal proceedings, *i.e.* the filing being an attempt to overcome inventive step objections based on document D6. The proprietor also indicated a basis for the amendment in the application as filed and provided reasons why the amendments overcame the lack of inventive step of claim 1 of auxiliary request 4.

27. The opponent argued that the request should have been filed earlier, since the proprietor could have expected document D6 to be admitted into the proceedings, a document which had been known to the proprietor for a considerable amount of time.

28. The board disagrees.

Document D6 has not been admitted by the opposition division. There was therefore no reason for the proprietor to file a corresponding request either still before the opposition division or with its statement setting out the grounds of its own appeal, in order to overcome any objection based on this document. This

only became necessary after re-filing of document D6 by the opponent with the statement setting out their grounds of appeal, and arguing lack of inventive step of auxiliary request 4 based on the disclosure of that document. The proprietor thus filed the request in good time.

29. The board makes use of its discretion and decides to admit the request (Article 12(4) RPBA).

Amendments (Article 123(2) EPC)

30. Auxiliary request 5 contains one independent and 5 dependent claims.

Independent claim 1 is a combination of independent claim 8 and dependent claim 9 of the application as filed, wherein the references to claims 1 and 5 as filed have been replaced by the wording of the respective claims.

Claims 2, 3 and 4 to 6 are based on claims 10, 11 and 2 to 4 of the application as filed, respectively, wherein the reference to other claims have been adapted.

The amendments are thus in accordance with the requirements of Article 123(2) EPC.

This was not disputed.

Inventive step (Article 56 EPC)

Closest prior art

31. The parties argued inventive step based on document D2 as closest prior art. The board does not see any reason

to deviate from this approach.

Differing features

32. The process according to claim 1 of auxiliary request 5 contains the additional features that the two temperatures (c1) and (c2) of the saponification step (c) are carried out at specific temperature ranges, *i.e.* at temperatures in the range of from 20 to 80°C, and from 175 to 195°C, respectively.
33. In the process disclosed in document D2 (see lines 22 to 36 on page 4) the saponification is carried out for 3 hours at a first temperature of 30°C, followed by a further 4 hours at a second temperature of 95 to 102°C.
34. The claimed process thus differs from the process according to D2 in addition to the features discussed in point 7. above in that the second saponification step (c2) is carried out at a temperature in the range of from 175 to 195°C, instead of between 95 and 102°C.

This was not disputed.

Technical effect and objective technical problem

35. According to paragraph [0059] of the contested patent, step (c2) can preferably be performed at a temperature range of from 175 to 195°C. The patent further discloses that a partial racemization takes place during step (c2). The proprietor referred to table 2 of the contested patent. According to the proprietor, the table disclosed that heating of a solution of MGDA-N₃ at different temperatures led to different values of enantiomeric excess. Heating at 120°C (below the temperature (c2) of claim 1) led to a composition with

an enantiomeric excess of 88,8% (outside the claimed range of from 10 to 75%), whereas heating at a temperature of 180°C led to a solution with an enantiomeric excess of between 11,6 and 56,6% (within the claimed range). A temperature inside the claimed range of from 175 to 195°C thus led to a solution comprising an enantiomeric mixture of L- and D-MGDA within the desired range of claim 1.

36. The opponent did not dispute that the temperature disclosed in column 2 table 2 indicated a temperature of the second saponification step. They argued, however, that the effect shown in table 2 was not due to the temperature alone, but could only be achieved in combination with the appropriate heating period.
37. The board is not convinced by this argument.

It is correct that table 2 of the contested patent shows that the heating period has an influence on the enantiomeric excess obtained, which varies between 11,6 and 94,3%. It is noted, however, that all of the tested periods (20, 40 and 60 min) lead to an enantiomeric excess within the desired range of 10 to 75% if the temperature is kept within the range of from 175 to 195°C (see the examples (c2.2) to (c2.4) in table 2: 56.6, 22.6 and 11.6 % ee, respectively). Furthermore, the comparison of example C-(c2.1) and (c2.4) shows that a temperature increase from 120°C (outside the claimed range) to 180°C (within the claimed range) leads to a change in enantiomeric excess from 88.8 % ee to 11.6 % ee, *i.e.* from a value outside the desired range to a value inside it. Since the heating period remained the same in both examples (60 min), the effect is apparently only caused by the difference in temperature. The opponent also failed to show that any

other temperature within the claimed range leads to an enantiomeric excess outside the desired range.

38. The objective technical problem can thus be seen in the provision of an improved process for making a mixture of L- and D-enantiomers of methyl glycine diacetic acid (MGDA) or its respective mono-, di or trialkali metal or mono-, di- or triammonium salts, wherein the mixture contains predominantly the respective L-isomer with an enantiomeric excess (ee) in the range of from 10 to 75% or a 40 to 60% by weight aqueous solution thereof.

Solution to the technical problem

39. The technical problem is solved by the provision of a process, wherein step (c2) is carried out at a temperature in the range of from 175 to 195°C.

Inventiveness of the claimed solution

40. Document D6 suggests to carry out the saponification step at two different temperatures (see page 7, lines 4 to 10). The temperature range for the first saponification step is the same as in the claimed process, *i.e.* from 20 to 80°C (see page 7, line 7). The temperature range for the second saponification step is at least 90°C (see page 7, line 8). Example 10 of document D6 discloses a temperature of from 95 to 102°C.
41. Although the claimed range of from 175 to 197°C is higher than 90°C, document D6 does not suggest to select a temperature range of from 175 to 195°C in order to solve the objective technical problem of providing an improved process, *i.e.* to obtain a mixture consisting predominantly of the L-enantiomer of MGDA

with the desired ee-value of from 10 to 75%.

42. The skilled person does therefore not find any suggestion in the cited prior art to modify the process of document D2 by applying a temperature of the second saponification step in the range of from 175 to 195°C in order to obtain a mixture of L- and D-enantiomer of MGDA or its salts containing predominantly the respective L-enantiomer with an enantiomeric excess in the range of from 10 to 75%. The presence of an inventive step can thus be acknowledged, and auxiliary request 5 meets the requirements of Article 56 EPC.

No further objections were raised by the opponent. Auxiliary request 5 is thus allowable.

Remittal

43. The description of the patent as granted contains subject-matter not encompassed by the claims of auxiliary request 5 and thus may require amendment (Article 84 EPC). The board has decided to make use of its discretion to remit the case to the opposition division for the description to be adapted (Article 111(1) EPC). The parties did not object to a remittal.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the opposition division with the order to maintain the patent with the following claims and a description adapted thereto:

Claims: No. 1 to 6 of the auxiliary request 5 filed with letter dated 27 August 2020.

The Registrar:

The Chairman:



C. Rodríguez Rodríguez

P. Gryczka

Decision electronically authenticated