Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 15 February 2022

Case Number: T 1742/17 - 3.3.10

Application Number: 08856599.9

Publication Number: 2215042

IPC: C07C41/03, C07C43/12, C07C231/12, C07C303/40

Language of the proceedings: EN

Title of invention:
A METHOD OF FORMING ALKOXYLATED FLOUROALCOHOLS

Patent Proprietor:
Chemguard, Ltd.
Martin, Thomas Joseph

Opponent:
Solvay Specialty Polymers Italy S.p.A.

Headword:
A METHOD OF FORMING ALKOXYLATED FLOUROALCOHOLS/Chemguard

Relevant legal provisions:
RPBA Art. 12(2)
RPBA 2020 Art. 13(1), 13(2)
EPC Art. 56

Keyword:
Admissibility of appeal: yes
Statement of grounds of appeal - party's complete case
Inventive step - main request (no) - auxiliary request (yes)
Amendment after summons - exercise of discretion

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 1742/17 - 3.3.10

D E C I S I O N
of Technical Board of Appeal 3.3.10
of 15 February 2022

Appellant II: (Patent Proprietor 1)	Chemguard, Ltd. 204 S. 6th Avenue Mansfield, TX 76063 (US)
Appellant II: (Patent Proprietor 2)	Martin, Thomas Joseph 3317 Vista Lake Circle Mansfield, TX 76063 (US)
Representative:	dompatent von Kreisler Selting Werner - Partnerschaft von Patent- und Rechtsanwälten mbB Deichmannhaus am Dom Bahnhofsvorplatz 1 50667 Köln (DE)
Appellant I: (Opponent)	Solvay Specialty Polymers Italy S.p.A. Via Lombardia, 20 20021 Bollate (MI) (IT)
Representative:	Benvenuti, Federica Solvay S.A. Département de la Propriété Intellectuelle Rue de Ransbeek, 310 1120 Bruxelles (BE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 14 June 2017 concerning maintenance of the European Patent No. 2215042 in amended form.**

Composition of the Board:

Chair	R. Pérez Carlón
Members:	J.-C. Schmid
	F. Blumer

Summary of Facts and Submissions

I. Appellant I (opponent) and appellants II (patent proprietors) lodged an appeal against the interlocutory decision of the opposition division which found that the European patent No. 2 215 042 amended according to the then pending auxiliary request V met the requirements of the EPC.

Claim 1 of the patent as granted read as follows:

"1. A method of forming an alkoxylated fluoroalcohol comprising combining a boron compound having at least one boron-oxygen bond and an iodine source with reactants of a fluoroalcohol and an alkylene oxide in the presence of a base and allowing the reactants to react to form an alkoxylated fluoroalcohol reaction product."

II. Notice of opposition had been filed by appellant I requesting revocation of the patent-in-suit in its entirety on the grounds of lack of novelty and inventive step (Article 100(a) EPC), insufficiency of disclosure of the invention (Article 100(b) EPC) and extension of the subject-matter of the patent-in-suit beyond the content of the application as filed (Article 100(c) EPC). Inter alia the following documents were cited:

(1) US-A-5 608 116 and
(3) US-A-5 026 923

The opposition division held inter alia that the grounds of opposition under Articles 100(b) and (c) EPC did not prejudice the maintenance of the patent but

that the subject-matter of claim 1 of the patent as granted lacked novelty over document (1).

III. According to appellant I, the claimed invention was not sufficiently disclosed in the contested patent to be carried out by a person skilled in the art without undue burden. Claim 13 of the patent as granted extended the subject-matter of the patent beyond the content of the application as filed. Furthermore, the subject-matter of claim 1 of the auxiliary request 5 maintained by the opposition division lacked novelty and an inventive step over document (1).

IV. According to appellants II, appellant I's appeal was not admissible. The subject-matter of claim 1 of the patent as granted was novel and inventive over document (1). Appellants II also filed auxiliary requests I to XII with the grounds of appeal.

V. With the communication accompanying the summons to oral proceedings, the board indicated that it was of the view that appellant I's appeal was admissible, but that their submissions with respect to subject-matter extending beyond the content of the application as filed and insufficiency of disclosure of the invention would not be admitted into the appeal proceedings. In the preliminary view of the board, the subject-matter of claim 1 of the patent as granted lacked an inventive step starting from document (1) in combination with document (3).

VI. With a letter dated 17 January 2022, appellants II further filed auxiliary requests A and B.

Claim 1 of auxiliary request A differs from claim 1 of the main request in that the base is a metal hydroxide.

Claim 1 of auxiliary request B differs from claim 1 of the patent as granted in that the boron compound is selected from at least one of boric acid (H_3BO_3), meta boric acid (HBO_2), tetra boric acid ($H_2B_4O_7$), boron oxide (B_2O_3), trimethyl borate, triethyl borate, triisopropyl borate, tripropyl borate, tributyl borate, sodium tetraborate, potassium tetraborate or combinations of these.

VII. During the oral proceedings before the board on 15 February 2022, appellants II (patent proprietors) defended the maintenance of the patent in suit on the basis of the patent as granted, auxiliary requests A and B and auxiliary requests I to XII, in this order. Appellant I requested that the auxiliary requests be not admitted in the appeal proceedings, since they were late filed and did not avoid the inventive step objection.

VIII. Appellant I (opponent) requested that the decision under appeal be set aside and the patent be revoked.

Appellants II (patent proprietors) requested that the decision under appeal be set aside and the patent be maintained as granted (main request) or subsidiarily be maintained on the basis of one of the Auxiliary Requests A or B filed with letter dated 17 January 2022, or on the basis of Auxiliary Request I filed with letter dated 24 October 2017,
or

that the appeals be dismissed, that is, the patent be maintained on the basis of Auxiliary Request II filed with letter dated 24 October 2017,
or
that the decision under appeal be set aside and the patent be maintained on the basis of one of the Auxiliary Requests III to XII filed with letter dated 24 October 2017.

IX. At the end of the oral proceedings, the board announced its decision.

Reasons for the Decision

Admissibility of appellant I's appeal

1. Appellants II objected to the admissibility of appellant I's appeal, since it failed to provide reasons in the statement setting the grounds of appeal why the contested decision was incorrect. In the communication pursuant to Article 15(1) RPBA accompanying the summons to the oral proceedings, the board gave its preliminary view that the appeal was admissible, since appellant I had indicated in the statement of the grounds of appeal why they disagreed with the conclusion of the opposition division on the issues of novelty and inventive step with respect to the subject-matter of the then pending auxiliary request V.

During the oral proceedings before the board, appellant I did not wish to add any further arguments. In these circumstances, the board has no reason to depart from its preliminary view that opponent I's appeal is admissible.

Admittance in the appeal proceedings of the objections under Articles 100(b) and (c) EPC.

2. Insufficiency of the disclosure of the invention and subject-matter extending beyond the content opposition division the application as filed were raised as grounds for opposition. In the decision under appeal, the opposition division found that the granted claims did not violate Article 123(2) EPC and that the main request (patent as granted) complied with Article 83 EPC and rejected these grounds (see points 6.1.3, 6.3.7 and 6.3.8 of the decision under appeal).

In the statement stating the grounds of appeal, appellant I again submitted that the invention was insufficiently disclosed and that the subject-matter of claim 13 extended beyond the content of the application as filed. It merely repeated arguments already put forward before the first instance in their notice of opposition, but did not provide any argument against the opposition division's reasoning rejecting these grounds of opposition. In its reply to the board's communication under Article 15(1) RPBA, appellant I again only referred to its submissions in the first instance proceedings (section 2.1 of its letter of 15 December 2021). Merely referring to the submissions made during the opposition proceedings cannot be regarded as fulfilling the requirement of Article 12(2) RPBA 2007 or Article 12(3) RPBA 2020 to state the reasons why it is sought that the decision under appeal be set aside.

The objections under Articles 100(b) and (c) EPC are thus not taken into account in the appeal proceedings.

Main request: patent as granted - inventive step

3. *Closest prior art*

Document (1) represents the closest state of the art to the invention. This document relates to a catalyst useful for the preparation of fluoroalkylalkoxylates comprising reacting at least one fluorinated alcohol with at least one alkylene epoxide. The catalyst system comprises an iodine source and an alkali metal borohydride (see column 2, lines 23 to 28, examples 1 and 2, claim 1). This catalyst system is effective in the absence of other catalysts such as strong bases, although they can be present if desired (column 2, lines 44 to 47).

Examples 1 and 2 describe the ethoxylation with ethylene oxide of purified fluorinated alcohol employing sodium borohydride and iodine as catalyst system. Control C describes the ethoxylation of purified fluorinated alcohol employing sodium hydride (strong base) and sodium borohydride as the catalyst, with subsequent addition of sodium iodide.

Appellant I argued that the subject-matter of claim 1 lacked novelty over document (1), since the skilled person would immediately recognise that a boron compound having a boron-oxygen bond will be formed when carrying out to method disclosed in document (1), in which sodium borohydride is contacted with fluorinated alcohols. This was disputed by appellants II. Since the board came to the conclusion that the subject-matter of claim 1 was not inventive even if the position of appellants II that document (1) does not disclose a boron-oxygen bond is followed, it is assumed in the following, in favour of appellants II, that the

subject-matter of claim 1 of the patent as granted differs from the process disclosed in document (1) by the presence of a boron compound having at least one boron-oxygen bond.

4. *Technical* problem

Appellants II submitted that the technical problem was the provision of an improved process for preparing alkoxylated fluoroalcohols.

5. *Solution*

The proposed solution is the process according to claim 1 of the patent as granted, characterized by using a boron compound having at least one boron-oxygen bond as catalyst.

6. *Success*

6.1 It is general knowledge that sodium borohydride is toxic and hygroscopic, which made it difficult to handle. Accordingly, in the absence of any evidence to the contrary, the board is satisfied that the proposed solution, which is characterized by using a boron compound comprising a B-O bond, thus avoiding the use of sodium borohydride, provides an improvement over the process disclosed in document (1).

6.2 According to appellant I, the technical problem was not solved across the whole scope of claim 1. They referred to an experiment filed on 5 January 2015 with the notice of opposition (document (4)) wherein attempts to carry out the ethoxylation of polydispersed perfluoropolyether (PFPE) di-alcohols having average molecular weight Mn of 1410 and 1530 with boric acid

failed. However, the improvement sought resides in the increased safety or handling of a method of alkoxylating fluoroalcohols. The experiment provided by appellant I does not show that the proposed solution, i.e. the use of a boron compound having at least one boron-oxygen bond as the catalyst, does not improve safety or handing of the prior art alkoxylation process. Consequently, appellant I's experiment is not relevant to show that the technical problem is not solved by the claimed method and appellant I's argument should be rejected.

7. *Obviousness*

7.1 As mentioned above, it is general knowledge that sodium borohydride is difficult to handle. Furthermore, document (1) mentions that an excess of borohydride may lead to potential difficulty in controlling the rate of the exothermic alkoxylation reaction (column 2, lines 53 to 59). Accordingly, the skilled person, wishing to improve the process, would look for other catalysts and would contemplate prior art documents in the field of alcohols alkoxylation proposing alternative catalysts. They would thus be struck by document (3), which relates to the alkoxylation of alcohols catalysed by borate salts of the rare earth elements (column 1, first paragraph; column 5, lines 45 to 49). Besides obtaining a narrow distribution of alkylene oxide adducts, document (3) mentions that the reaction can be safely accomplished (column 9, line 45 to 48). Document (3) teaches that the term borate refers to an anion containing boron and oxygen (see column 4, lines 31 and 32). The board concludes from the above that the state of the art represented by document (3) gives the skilled person a concrete hint as to how to solve the problem underlying the patent in suit of providing an

improved method for the alkoxylation of fluoroalcohols, namely by replacing the sodium borohydride catalyst used in the closest prior art document (1) by the borate salts of the rare earth elements disclosed in document (3), thereby arriving at the solution proposed by the patent in suit.

7.2 According to appellants II, document (1) taught away from using a base in combination with the boron catalyst (column 1, lines 40 to 44). The skilled person was therefore prevented from carrying out the alkoxylation of the fluoroalcohols in the presence of a base. Furthermore, example 1 of document (3) did not disclose the use of the borate salts catalyst in combination with a base.

However, the discouraging teaching of document (1) on column 1, lines 40 to 44, is limited to the use of a strong base alone as the catalyst for the alkoxylation of fluorinated alcohols. Document (1) discloses that strong bases can be used in combination with the catalyst system (see column 2, line 44 to 47). Furthermore, claim 1 of the main request does not require the presence of a strong base, but only of a base. This includes the embodiment of example 1 of document (3), in which the catalyst has a pH of 8. Consequently, appellants II's argument is rejected.

7.3 According to appellants II, the skilled person would not consider the teaching of document (3) because it is not directed to the alkoxylation of fluoroalcohols. However, document (3) relates to the alkoxylation of any compound having an active hydrogen, including the class of alcohols which comprises fluoroalcohols. Thus, this argument must also be rejected.

7.4 Therefore, the board comes to the conclusion that the subject-matter of claim 1 of the patent as granted represents an obvious solution to the problem of providing an improved process for preparing alkoxylated fluoroalcohols. As a result, appellants II's main request is not allowable for lack of inventive step pursuant to Article 56 EPC.

Admittance of auxiliary requests A and B

8. These requests were filed after notification of the summons to oral proceedings and thus Article 13(2) RPBA 2020 applies, which stipulates that such amendments shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified by cogent reasons. Although this discretion is rather limited, the board still has to consider and balance all relevant circumstances when using its discretion. These circumstances include the development of the case.

In the case at hand, the board had pointed out in the communication under Article 15(1) RPBA that, given the indication of a pH equals 8, the catalyst in example 1 of document (3) included a base, which strengthened the inventive step objection raised by appellant I. In reaction thereto, Appellants II filed auxiliary requests A and B. This filing can be regarded as a reaction to an exceptional circumstance. Where exceptional circumstances are shown to exist, the board may decide to admit or not the amendment in the exercise of its discretion.

8.1 *Auxiliary request A*

Claim 1 of auxiliary request A has been amended with a feature taken from the description. The board considers that such a change made shortly before oral proceedings did not meet the requirement for procedural economy as set out in Article 13(1) RPBA 2020.
Thus, the board decides not to admit this request into the proceedings

8.2 *Auxiliary request B*

In claim 1 of this request, the boron compound required has been specified according to the meanings disclosed in dependent claims 2 and 4. This request thus differs from the granted claims merely by the abandonment of claims 1 and 3 of the patent as granted.

This amendment directly addresses the inventive step objection based on the combination of document (1) with document (3), and it is immediately apparent why the amendment should overcome this objection. Furthermore, the amendment has not created any additional burden for the other party, since the amendment focuses the subject matter of auxiliary request B on the core of the invention. It does not increase the technical and procedural complexity of the case and does not add anything new with regard to the assessment of inventive step. Furthermore, the novelty and inventive step objections are clearly avoided by this amendment.
Overall, although appellants II only filed auxiliary request B in reaction to the preliminary opinion of the board, it did so in a way that serves procedural economy. Taking these specific factors into account, the board considers that the reasons for filing auxiliary request B were cogent and therefore decided to admit it into the appeal proceedings.

Auxiliary request B: inventive step

9. Claim 1 of auxiliary request B requires the boron compound to be boric acid, meta boric acid, tetra boric acid, boron oxide, trimethyl borate, triethyl borate, triisopropyl borate, tripropyl borate, tributyl borate, sodium tetraborate and/or potassium tetraborate,

9.1 The sole catalysts taught in document (3) for the alkylation of alcohols are borate salts of rare earth elements. Document (3) does not teach that the boron compounds now required by claim 1 of auxiliary request B can be used as a catalyst in replacement of sodium tetra borohydride.

Therefore, the subject-matter of claim 1 of auxiliary request B is not rendered obvious by the combination of document (1) with document (3).

9.2 According to appellant I, the method of claim 1 of auxiliary request B does not exclude using, in addition to the compulsory catalyst, lanthanide borates. On the other hand, document (3) discloses that lanthanide borate catalysts may be used in combination with borate salts, particularly sodium perborate like tetraborate. Accordingly, by combining document (1) and document (3), the skilled person arrives at the subject-matter of claim 1 of auxiliary request B.

However, the question is not whether the skilled person could have arrived at something falling within the scope of claim 1 by combining two documents, but whether they would have done so in order to solve the underlying technical problem prompted by the prior art. Starting from document (1) as the closest prior art, the skilled person is looking for alkoxylation

catalysts which do not have the drawbacks of sodium borohydride. Document (3) teaches that borate salts of rare earth elements may be used as alternative catalysts, but these compounds are not required by claim 1. Document (3) is silent on sodium or potassium tetraborate salts for the purpose of catalysing the alkoxylation reaction, and does not mention any of the other boron compounds required by claim 1, either. Once an invention is disclosed, it can often be shown that the skilled person could have made it by selecting different elements in the prior art, but such arguments have to be disregarded as the product of ex post facto analysis. Accordingly, appellant I's argument must be rejected.

9.3 To summarise, document (1) in combination with document (3) does not render the subject-matter of claim 1 of auxiliary request B obvious. Consequently, the subject-matter of claim 1 of auxiliary request B involves an inventive step (Article 56 EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of Auxiliary Request B (claims 1 to 10) as filed with letter of 17 January 2022 and a description yet to be adapted.

The Registrar: The Chair:

C. Rodríguez Rodríguez R. Pérez Carlón

Decision electronically authenticated