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Datasheet for the decision of 13 April 2017

Case Number: T 0260/14 - 3.3.07

Application Number: 07799773.2

Publication Number: 2046262

IPC: A61K6/10

Language of the proceedings: EN

Title of invention:
Polyether-based preparations and use thereof

Patent Proprietor:
3M Innovative Properties Company

Opponent:
Heraeus Kulzer GmbH

Headword:
Polyether-based preparations

Relevant legal provisions:
EPC Art. 100(b), 54(3), 56
RPBA Art. 13(1)

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It can be changed at any time and without notice.

Keyword:
Grounds for opposition - insufficiency of disclosure (no)
Priority - partial priority (yes)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:
G 0001/15, G 0002/98, T 1222/11

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Case Number: T 0260/14 - 3.3.07

D E C I S I O N
of Technical Board of Appeal 3.3.07
of 13 April 2017

Appellant: (Patent Proprietor)	3M Innovative Properties Company 3M Center P.O.Box 33427 St. Paul, MN 55133-3427 (US)
Representative:	Brem, Roland 3M ESPE AG IP Department ESPE Platz 82229 Seefeld (DE)
Appellant: (Opponent)	Heraeus Kulzer GmbH Grüner Weg 11 D-63450 Hanau (DE)
Representative:	Bendele, Tanja RUHR -IP Patentanwälte Brucker Holt 58 45133 Essen (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 10 December 2013 concerning maintenance of the European Patent No. 2046262 in amended form.**

Composition of the Board:

Chairman	J. Riolo
Members:	A. Usuelli
	Y. Podbielski

Summary of Facts and Submissions

I. European patent No. 2 046 262 based on European patent application No. 07799773.2 was opposed on the grounds that its subject-matter lacked novelty and inventive step and was not sufficiently disclosed.

Claim 1 of the patent read as follows:

"A dental impression material comprising a base paste and a catalyst paste, wherein the base paste comprises at least one polymerizable polyether material with a linear backbone having no side chains which is selected from the group consisting of

a) polyethers with at least one aziridino group,
b) polyethers with at least one olefinically unsaturated group and a compound with at least one SiH group and
c) polyethers with at least one olefinically unsaturated group and at least one SiH group and
d) polyethers with at least one alkoxysilyl group;
e) polyethers with at least one olefinically unsaturated group

and 0.1 to 15% by weight of a fluidity improver, the fluidity improver being a random copolyether of ethyleneoxide and at least one more alkyleneoxide which is not ethylene oxide, the copolymer comprising at least about 50% of structural elements from ethylene oxide as a fluidity improver, the fluidity improver having a molecular weight Mw in a range of 100 to 1900, and wherein the catalyst paste comprises at least one initiator or catalyst or both for initiating or catalyzing the polymerization of the at least one polymerizable polyether material."

Independent claim 10 related to a cured dental impression material obtainable by curing the material of claim 1. Independent claims 11, 13 and 14 related to methods or uses concerning the dental impression material of claim 1. Independent claim 15 related to a kit for producing dental materials comprising a base component containing from 0.1 to 15% by weight of the fluidity improver of claim 1.

II. The following documents were among those cited during the first-instance proceedings:

D1: US 5,130,348
D2: US 2003/0190596
D3: WO 02/43670
D4: Proceedings of the 7th ICOM-CC working group on wet organic archaeological materials conference, 1998
D5: EP 1 882 469 - Priority of the patent in suit
D7a: Arco Chemical, Acclaim polyether polyols, 1996

III. By an interlocutory decision posted on 10 December 2013, the opposition division maintained the patent in amended form on the basis of the patent proprietor's third auxiliary request, filed during oral proceedings held on 7 November 2013.

IV. In the decision under appeal the opposition division came to the conclusion that the patent was not entitled to the priority date claimed, and that priority document D5, published after the filing date of the opposed patent, was prior art pursuant to Article 54(3) EPC.

The dental impression material containing base paste 2, disclosed on page 15 of D5, anticipated the

subject-matter of claim 1 of the opposed patent and of auxiliary requests 1 and 2.

The subject-matter of auxiliary request 3 was considered to meet the requirements of the EPC.

V. The patent proprietor (hereinafter: appellant-patent proprietor) and the opponent (hereinafter: appellant-opponent) both appealed against the decision of the opposition division.

With the statement setting out the grounds of appeal the appellant-patent proprietor requested the opposition to be rejected and submitted six auxiliary requests.

VI. In a communication pursuant to Article 15(1) RPBA issued on 28 February 2017, the Board expressed the opinion that the patent was sufficiently disclosed and met the requirement of novelty. Concerning the requirement of inventive step, it observed that the technical problem was to be defined taking into account *inter alia* the experiments submitted during the examination phase by the appellant-patent proprietor, which both parties had discussed in their statements setting out the grounds of appeal.

VII. An additional experimental report (document D17) was submitted by the appellant-patent proprietor by letter of 28 March 2017.

VIII. Oral proceedings were held on 13 April 2017. They were not attended by the appellant-opponent, as announced in advance in its letter of 8 March 2017.

IX. In relation to the requirement of novelty of the patent, the appellant-patent proprietor essentially argued that in view of decision G 1/15 the priority document could not be regarded as novelty-destroying. As to inventive step, it argued that the evidence on file demonstrated the better performance of a dental impression material comprising a base paste as defined in claim 1, over the materials disclosed in the closest prior art D1. On the basis of this improvement the product of the patent in suit was inventive over the cited prior-art documents.

X. The appellant-opponent's arguments can be summarised as follows:

(a) The skilled person would not have been able to distinguish polymers useful as fluidity improvers from other substances, such as surfactants, which could be present in the dental impression material. In view of that, the patent did not meet the requirement of sufficiency of disclosure.

(b) Claim 1 of the patent was not entitled to priority. The working example disclosed in paragraphs [0154] to [0156] of priority document D5 was novelty destroying pursuant to Article 54(3) EPC. The principles affirmed in G 1/15 did not apply to the present case. Moreover, this decision did not cover the situation where partial priority was claimed with regard to an actual numerical range selection.

(c) Document D1 was the closest prior art for the assessment of inventive step. The comparative experiments carried out by the patent proprietor did not establish any improvement for the dental impression material of the patent in suit over the materials of D1. The objective technical problem was the provision of an alternative dental

impression material. The selection of materials containing a copolymer of polyethylene oxide having a molecular weight in the range 100 to 1900 was obvious since D1, in its broadest disclosure, suggested the use of mixing additives based on polyalkylene oxide polymers of a molecular weight over 300. The subject-matter of the patent was obvious also in view of the teaching of D1 in combination with documents D2 or D3.

XI. The appellant-patent proprietor requested that the decision under appeal be set aside and that the opposition be rejected or, alternatively, that the patent be maintained in accordance with one of the six auxiliary requests submitted with the grounds of appeal on 10 April 2014.

XII. The appellant-opponent requested in writing that the decision under appeal be set aside and that the patent be revoked.

Reasons for the Decision

Main request (patent as granted)

1. Sufficiency of disclosure

1.1 The appellant-opponent's insufficiency objection concerns the definition of the "fluidity improvers". In its opinion a skilled person would not be able to distinguish polymers useful as fluidity improvers from other substances such as surfactants which might optionally be present in the dental impression materials (see e.g. paragraph [0147] of the patent).

1.2 In this respect it is observed that the patent provides in claim 1 and in paragraph [0091] a general definition for the copolymers useful as fluidity improvers. Additional information concerning these polymers is disclosed in the section "Fluidity improvers" of the description (pages 9 and 10). In particular, paragraphs [0106] and [0107] provide a list of commercially available products which are suitable as fluidity improvers. Furthermore, the patent exemplifies a base paste composition (see base paste 2, paragraph [0161]) containing a suitable fluidity improver. Thus, in the Board's view, the skilled person would find in the description of the patent sufficient guidance for the selection of the copolymers useful as fluidity improvers. The fact that some of these copolymers may be useful, for instance, as surfactants, and therefore may not be distinguishable from other substances included in the composition, is an issue that does not affect the skilled person's ability to carry out the invention.

Hence, the patent meets the requirement of sufficiency of disclosure.

2. Novelty

2.1 The opposition division decided that the patent was not entitled to the claimed priority date and that claim 1 of the patent in suit lacked novelty pursuant to Article 54(3) EPC in view of the priority document itself (document D5) which was published on 30 January 2008, i.e. after the filing date of the patent in suit (24 July 2007).

2.2 The appellant-opponent’s novelty attack against claim 1 of the patent in suit is based on a working example

disclosed in paragraphs [0154] to [0156] of D5 (hereinafter: "working example") relating to a dental impression material obtained by mixing the catalyst paste and base paste 2 disclosed in paragraph [0154]. The same working example is also disclosed in paragraphs [0159] to [0162] of the patent in suit.

In its statement setting out the grounds of appeal the appellant-patent proprietor argued that claim 1 of the patent enjoyed partial priority in respect of the part of the claim concerning the working example and that the working example disclosed in D5 could therefore not qualify as prior art under Article 54(3) EPC. The appellant-opponent argued that no priority could be acknowledged from D5 and that the subject-matter of claim 1 of the patent in suit lacked novelty in view of the working example disclosed in D5.

For the reasons set out below, the Board decides that partial priority can be acknowledged for the part of claim 1 concerning the working example.

2.3 In G 1/15 the Enlarged Board of Appeal affirmed the concept of partial priority by answering the questions of law referred to it as follows:

"*Under the EPC, entitlement to partial priority may not be refused for a claim encompassing alternative subject-matter by virtue of one or more generic expressions or otherwise (generic "OR"-claim) provided that said alternative subject-matter has been disclosed for the first time, directly, or at least implicitly, unambiguously and in an enabling manner in the priority document. No other substantive conditions or limitations apply in this respect.*" (see the order of the decision).

2.3.1 The first step in the assessment of whether certain subject-matter within a generic "OR"-claim may enjoy partial priority is to determine the subject-matter disclosed in the priority document that is relevant. G 1/15 gives guidance that this is to be done both in accordance with the disclosure test laid down in the conclusion of G 2/98, and on the basis of explanations put forward by the applicant or patent proprietor to support its claim to priority, in order to show what the skilled person would have been able to derive from the priority document (G 1/15, point 6.4 of the Reasons).

In this context the Board refers to G 2/98 where the Enlarged Board held that a claim to priority cannot be refused on the ground that certain elements of the invention for which priority is claimed do not appear among the claims formulated in the application whose priority is claimed, provided that the application as a whole specifically discloses such elements. In the case before the Board, the novelty-destroying disclosure forms part of priority document D5 and the relevant subject-matter disclosed in D5 is the working example.

2.3.2 The second step is to examine whether this subject-matter is encompassed by the claim of the patent claiming said priority (G 1/15, point 6.4 of the Reasons). The question is thus whether D5’s working example is encompassed by claim 1 of the patent in suit. The Board notes that G 1/15 concerns a generic "OR"-claim and that the Enlarged Board referred in its answer explicitly to this type of claim. Thus, in the case before it the Board also has to consider whether the working example is alternative subject-matter by virtue of a generic "OR"-claim.

In G 1/15 the Enlarged Board concurred with the obiter dictum in T 1222/11 (point 11.8 of the Reasons), according to which a decision on whether partial priority can be acknowledged for subject-matter disclosed in a priority document and encompassed by an "OR"-claim cannot depend on whether this subject-matter was expressly identified as a separate alternative in the claim (G 1/15, points 2 and 6.6 of the Reasons). Instead, the Enlarged Board gave examples of cases where the finding that a claim was entitled to partial priority to the extent that the claim encompassed specific alternatives disclosed in the priority document was based on a mere comparison of the ambit of the claim with the content of the priority document (G 1/15, point 2.4 of the Reasons).

In the case now before the Board, claim 1 of the patent in suit is a dental impression material comprising a base paste and a catalyst paste. Both pastes are described using generic features such as "polyethers" and "copolyether of ethyleneoxide". The working example is one specific embodiment of the claim (see paragraphs [0159] to [0162] of the patent in suit). This was never disputed by the parties. Multiple alternative working examples would be possible, with different variants falling within the generic features of claim 1. The working example is thus alternative subject-matter by virtue of a generic "OR"-claim which falls within the ambit of claim 1 of the patent in suit. Thus, the part of claim 1 which concerns the working example is entitled to partial priority. Therefore, the disclosure in the priority document of the working example cannot be considered to take away the novelty of the subject-matter of claim 1 pursuant to Article 54(3) EPC.

2.4 The Board does not accept the appellant-opponent's argument that the questions referred to the Enlarged Board in G 1/15 were not relevant for the case at issue. The appellant-opponent argued that the referral in G 1/15 concerned the situation where the priority document disclosed only one or more embodiments, but not the subject-matter of the entire claim claiming that priority, whereas the patent in suit comprised a limitation of the more general disclosure in D5. It supported this by reference to the molecular weight of the fluidity improver. Claim 1 of the patent in suit identified a range of 100-1900, whereas D5 disclosed a range of 100-3800.

The Board notes that this comparison, as well as the reference to other distinguishing features between the patent in suit and D5, concerns the question of whether priority can be acknowledged for the entire scope of claim 1 of the patent in suit. This is, however, not the issue which the Board needs to decide. The only relevant issue is whether partial priority can be acknowledged for that part of claim 1 which concerns the working example, i.e. that part of claim 1 against which the novelty attack was directed.

2.5 The appellant-opponent posed the question of whether the patentee, in a situation where the generic "OR"-claim and an actual selection of a numerical range are combined (i.e. partial priority claimed with regard to an actual numerical range selection), might be in a better position than a third person who filed a selection invention within the priority interval, for example by claiming a sub-range of 600-1900 of molecular weight. For the latter the criteria for assessing novelty of a selection invention would apply, which included the criterion that the claimed range is

sufficiently far removed from any specific examples disclosed in the prior art and from the end-points of the known range. It was therefore not clear whether the principle of equal treatment of applicants and third parties, as referred to in G 2/98 (point 8.1 of the Reasons), would still apply in future. The appellant-opponent argued that the criteria for assessing novelty and priority should be the same.

The Board does not regard the appellant-opponent's question as being based on the facts of the case. The partial priority claimed by the appellant-opponent does not concern a range. The working example contains the fluidity improver Breox PAG 50 A 20 which has one specific molecular weight. Thus, even if one were to assess novelty, the criteria which the appellant-opponent cited with regard to the assessment of novelty of a selection invention would not apply. The appellant-opponent might have had the question in mind of what criteria would apply for the assessment of partial priority if the alternative subject-matter of a claim was a sub-range within the broader range of the claim in question. However, this is not at issue in the present case.

In its submissions dated 30 March 2016 the appellant-opponent asked the Board to decide, in view of its arguments concerning the referred questions in G 1/15, whether a further referral to the Enlarged Board was necessary. In view of the above, the Board does not regard such a referral to be necessary.

2.6 New submissions with regard to novelty

2.6.1 On 6 April 2017, and thus only one week prior to the oral proceedings on 13 April 2017, which the appellant-

opponent did not attend, the appellant-opponent filed further submissions in reply to the Board's communication dated 28 February 2017. Whilst the submissions are said to concern inventive step, they can also be interpreted as a novelty attack based on D1. The appellant-proprietor objected to the introduction of this new novelty attack into the proceedings.

2.6.2 The admission of amendments to a party's case after it has filed its grounds of appeal or reply lies within the discretion of the Board (Article 13(1) of the Rules of Procedure of the Boards of Appeal). The appellant-opponent had referred to D1 already in the notice of opposition. However, throughout the opposition and opposition appeal proceedings and up to the submissions dated 6 April 2017, D1 had not formed the basis of a novelty attack. In view of the advanced stage of the appeal proceedings and the fact that throughout the proceedings the attacks on novelty were based only on D5, the Board decided not to admit the appellant-opponent's submissions to the extent that they can be understood as a novelty attack based on D1.

3. Inventive step

3.1 The invention underlying the patent in suit relates to curable preparations useful in the production of dental impression materials [0001]. In the "Summary of the invention" it is explained that these preparations are supplied to the dentist in the form of two separate pastes which are mixed before use. A problem commonly encountered with the materials known from the prior art is that the mixing of the two pastes requires complicated motorised mixing gears or the use of high force. The objective of the invention underlying the

patent in suit is therefore to provide dental impression materials in the form of two components which can be easily mixed and easily dispensed by manually driven dispensers (paragraphs [0011] and [0012]).

3.2 Closest prior art

3.2.1 The Board agrees with the appellants and with the opposition division that document D1 represents the closest prior art.

3.2.2 D1 relates to a dental impression material comprising two components (see column 2, "Summary of the invention"). The first component, corresponding to the base paste of the material of the patent in suit, comprises a polyether derivative containing a polyalkylene oxide skeleton substituted with aziridino end groups. Said polyether derivative is capable of polymerisation on addition of a catalyst which is included in the second component of the dental impression material (see paragraph linking columns 3 and 4). One of the two components furthermore contains a mixing additive which is described by the general formula I of column 3 which comprises homo- or copolymers containing a polyalkylene oxide skeleton. The average molecular weight of the mixing additive is between 300 and 20 000 and preferably between 500 and 10 000 (column 3, lines 32 to 43). It was not disputed by the parties that the product defined in D1 as the "mixing additive" corresponds to the fluidity improver of the patent in suit.

D1 discloses in column 5 an application example concerning the preparation of five dental impression materials (see experiments 3 to 7 in the table on

column 6). These materials are prepared by mixing a base component comprising a polyether derivative with aziridino end groups with a second component containing a catalyst and a mixing additive. In all the examples the mixing additive is a polyalkylene oxide derivative having a molecular weight of at least 2 000. The mixture of the two components contains from 10 to 15% of this polyalkylene oxide derivative.

3.2.3 The dental impression material defined in claim 1 of the opposed patent differs from the materials of D1 in the molecular weight of the fluidity improver, i.e. 100 to 1 900, which represents a selection within the broader range defined in D1 for the mixing additive (see point 3.2.2 above). Furthermore, D1 does not provide any information as to the amount of ethylene oxide units in the mixing additive.

Moreover, whereas the fluidity improver in the materials of the patent in suit is included in the component comprising the polymerisable polyether material, in the composition of D1 it is part of the catalyst paste.

3.3 Technical problem

3.3.1 The appellant-patent proprietor submitted various experimental data with a focus on the technical effects arising from the selection of a fluidity improver of low molecular weight.

Particularly relevant in the present context are the reports submitted on 29 October 2009 and on 28 March 2017 concerning the cyclic extrusion test, i.e. an experiment for assessing the ease of mixing the

base paste and the catalyst paste and of dispensing the material from a dispenser.

3.3.2 The report of October 2009 describes the preparation of a dental impression material according to claim 1 by mixing a catalyst paste with a base paste comprising the product Breox PAG A 20 as a fluidity improver. This preparation is compared *inter alia* with a process in which the same catalyst paste is mixed with a base paste comprising as fluidity improver the product Acclaim 3201 instead. Breox PAG A 20 and Acclaim 3201 are both copolymers containing ethylene-oxide units with molecular weights of respectively 500 and 3 000 (see D4, page 105 and D7a page 6). Thus, whereas Breox PAG A 20 is a fluidity improver having a molecular weight included in the range of claim 1, Acclaim 3201 has a molecular weight outside this range.

The results disclosed on page 3 of the report show the better performance in the cyclic extrusion test for the dental impression material according to claim 1 containing the product Breox PAG A 20 as a fluidity improver.

3.3.3 In the experimental report submitted on 28 March 2017, the appellant-patent proprietor assessed in the cyclic extrusion test the preparation of a dental impression material according to claim 1 wherein the fluidity improver is the product Breox PAG A 50, i.e. a copolymer of ethylene-oxide and propylene-oxide with molecular weight 1400 (see D17). This preparation performs better in the cyclic extrusion test than the dental impression material comprising Acclaim 3201.

3.3.4 Acclaim 3201 is not one of the mixing additives used in the dental impression materials disclosed in D1.

However, in experiments 3 to 6 of D1 (see table of column 6) the mixing additive used is a copolymer containing ethylene-oxide units as Acclaim 3201. The molecular weight of these mixing additives is always above 3 000 (see also examples 1 to 4). Thus, while retaining the same polyalkylene oxide skeleton as the mixing additives exemplified in D1, Acclaim 3201 comes closer to the fluidity improvers of the patent in terms of molecular weight. Accordingly, it is appropriate to use this product in the comparative composition.

Thus, in the Board's view, the experiments submitted by the appellant-patent proprietor do indeed highlight the beneficial effects of selecting as fluidity improver a copolymer containing ethylene-oxide units having a molecular range in the range of 100 to 1 900.

3.3.5 Experiment 7 of D1 (see table of column 6) relates to the preparation of a dental impression material involving the use of a polyethylene-oxide polymer of molecular weight 2 000 as mixing agent. This experiment appears less close to the subject-matter of claim 1 of the patent suit than experiments 3 to 6, since the mixing agent used differs from the fluidity improver of claim 1 not only in its molecular weight but also in its structure (polyethylene-oxide polymer vs. copolymer containing ethylene-oxide units). The experimental report of 28 March 2017 nevertheless also provides data in relation to preparation of the product of experiment 7. The results show a very poor performance in the cyclic extrusion test.

3.3.6 The appellant-opponent contested the relevance of experiments carried out by the appellant-patent proprietor, arguing *inter alia* that Acclaim 3201 differed from the fluidity improvers used in the

comparative tests (i.e. Breox PAG A 20 and Breox PAG A 50) not only in its molecular weight but also in the degree of hydroxy substitution.

However, it did not submit any evidence to corroborate its assertion that the degree of hydroxy substitution may have an effect on the performance of the products in the cyclic extrusion test. In more general terms, it is noted that the appellant-opponent did not file at any stage of the proceedings any experimental data to rebut the results presented in the test reports submitted by the appellant-patent proprietor.

3.3.7 Hence, on the basis of the evidence on file, the Board accepts that the selection of a fluidity improver as defined in claim 1 within the broad class of mixing agents described in D1 is linked to an improvement of the performance of the dental impression material in the cyclic extrusion tests.

The objective technical problem can therefore be defined as the provision of a dental impression material in the form of two components which is easier to prepare and deliver from a dispenser.

3.4 Obviousness

3.4.1 As mentioned in point 3.2.2 above, the mixing additive of D1 may have a molecular weight in the broad range between 300 to 20,000 (column 3, lines 40 to 42). The skilled person facing the problem defined above would not find any hint in this document to select copolymers of low molecular weight. Quite to the contrary, the results of the table of column 6 would rather suggest an improvement of the mixing quality of the two components when the mixing additive has a higher

molecular weight (see experiments 3 to 6 vs. experiments 2 and 7).

3.4.2 The other prior-art documents considered by the appellant-opponent, namely D2 and D3, do not provide any relevant suggestion that might lead the skilled person to use copolymers containing ethylene-oxide units having a molecular weight in the range of 100 to 1 900 in order to solve the technical problem.

3.4.3 In the light of the considerations set out above, the Board concludes that the subject-matter of claim 1 of the patent meets the requirement of Article 56 EPC.

For the same reasons, the subject-matter of the other independent claims of the patent is likewise inventive.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The opposition is rejected.

The Registrar: The Chairman:

S. Fabiani J. Riolo

Decision electronically authenticated