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**Datasheet for the decision
of 15 November 2018**

Case Number: T 0300/14 - 3.3.07

Application Number: 97946677.8

Publication Number: 0973482

IPC: A61K6/083

Language of the proceedings: EN

Title of invention:
Dental primer compositions

Patent Proprietor:
MINNESOTA MINING AND MANUFACTURING COMPANY

Opponent:
DMG Dental-Material Gesellschaft mbH

Headword:
Dental primer/MINNESOTA

Relevant legal provisions:
EPC Art. 84, 56

Keyword:
Claims - clarity (yes)
Inventive step - (yes)



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Case Number: T 0300/14 - 3.3.07

D E C I S I O N
of Technical Board of Appeal 3.3.07
of 15 November 2018

Appellant: MINNESOTA MINING AND MANUFACTURING COMPANY
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
28 November 2013 concerning maintenance of the
European Patent No. 0973482 in amended form.**

Composition of the Board:

Chairman J. Riolo
Members: A. Usuelli
C. Schmidt
D. Boulois
Y. Podbielski

Summary of Facts and Submissions

- I. European Patent 973 482 was opposed on the grounds that its subject-matter lacked novelty and inventive step.

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

D1: Invoice 245491
D2: Delivery 945749
D3: "Packzettel 12368"
D12: Dental Magazin 1/95- Advertisement for Ecusit®-System
D17: Affidavit of Mr Müller
D18: Affidavit of Ms Nickels-Thomsen
D21: Experimental report dated 13 December 2007
D25: US 5,554,030
D27: Experimental report contained in the letter of 24 September 2013

- II. The opposition division held that the patent and the invention to which it related according to auxiliary request 2, met the requirements of the Convention. This decision was appealed by the patent proprietor and by the opponent.

- III. The opposition division's decision was based on the patent as granted as main request and on two auxiliary requests filed with letter dated 17 December 2007.

Claim 1 of the patent read as follows:

"1. A multiple-part dental adhesive primer composition comprising at least parts A and B, wherein Part A) comprises

- i) 0.1 to 90% by weight of an acidic polymerizable compound that is a monomer, oligomer, pre-polymer or a polymer having molecular weight greater than 250, further comprising an adhesively effective amount of acidic groups,
- ii) 1-90 % by weight of a polymerizable diluent, the acidic polymerizable compound being selected such that if water is present the pH of Part A is greater than about 2; and wherein

Part B) comprises

- iii) an acidic material present at a concentration by weight of 0.1 to 100 %, and such that the pH of Part B is below about 2;
- wherein Parts A and B together contain
- iv) 0.5 to 90% by weight of water,
 - v) 0.01 to 20% by weight of a curing agent
 - vi) a non-aqueous solvent present at a concentration by weight of 0-99.9%".

Claim 1 of auxiliary request 1 filed on 17 December 2007 differed from claim 1 of the patent in the presence of the following feature at the end of the definition of component i):

"wherein the polymerizable moiety is connected to the rest of the compound through an amide functionality".

Claim 1 of auxiliary request 2 filed on 17 December 2007 differed from claim 1 of the patent in specifying the chemical formula of the polymerizable compound contained in component i).

- IV. In the decision under appeal the opposition division came to the conclusion that the product Ecusit® Primer-Mono was available to the public before the

priority date and that it took away the novelty of the patent.

Auxiliary request 1 did not comply with Article 84 EPC since the feature "wherein the polymerizable moiety is connected to the rest of the compound through an amide functionality" was not clear.

Concerning auxiliary request 2, the opposition division held that the primer composition defined in claim 1 of this request differed from the product Ecusit® Primer-Mono in that in component i) the polymerizable group was linked to the rest of the molecule by an amide linkage whereas in the corresponding component of Ecusit® Primer-Mono an ester linkage was present. The experimental reports D21 and D27 demonstrated that this difference resulted in an increase of the adhesion strength. None of the prior art documents suggested that this effect could be achieved by replacing the ester linkages in the polymerizable component with amide linkages. Hence, auxiliary request 2 met the requirements of inventive step.

- V. In the statement setting out the grounds of appeal submitted on 31 March 2014 the appellant-patent proprietor requested to set aside the decision of the opposition division and to reject the opposition or, alternatively, to maintain the patent on the basis of one of three auxiliary requests.

Claim 1 of the first and third auxiliary requests were identical respectively to claim 1 of auxiliary requests 1 and 2 considered by the opposition division (see point III above). Claim 1 of the second auxiliary request differed from claim 1 of the first auxiliary request 1 only in the replacement of the feature

"...the polymerizable moiety...", by the feature "...a polymerizable moiety....".

VI. With the statement setting out the grounds of appeal filed on 8 April 2014 the appellant-opponent requested that the decision under appeal be set aside and the patent be revoked. With the same submission the appellant-opponent filed the following document:

D28: Experimental report dated 7 April 2014

VII. The appellant-opponent communicated on 12 September 2017 that it had decided not to attend the oral proceedings scheduled for the 15 November 2018. It further stated that it withdrew its request for oral proceedings.

VIII. In a communication pursuant to Article 15(1) RPBA issued on 27 September 2018, the Board expressed the opinion that claim 1 of the patent was anticipated by the prior use of the product Ecusit® Primer-Mono. It furthermore considered that the first auxiliary request filed with letter dated 31 March 2014 complied with the requirements of Articles 84, 54 and 56 EPC.

IX. By letter dated 10 October 2018 the appellant-patent proprietor indicated that it withdrew its main request (patent as granted) and promoted the first auxiliary request filed on 31 March 2014 to become the new main request under the conditions that the appellant-opponent did not request *de novo* oral proceedings and did not file any further briefs, and the Board maintained the opinion expressed in the communication of 27 September 2018 with regard to the first auxiliary request. It further announced that it would not attend the oral proceedings.

X. Oral proceedings were held on 15 November 2018 in the absence of the parties.

XI. The arguments presented in writing by the appellant-opponent with regard to the new main request (filed with letter dated 31 March 2014 as first auxiliary request) can be summarised as follows:

(a) Article 84 EPC

The amendment introduced in claim 1 specified that the polymerizable moiety was connected through an amide moiety to the rest of the compound. This feature was unclear already for the reason that the claim did not define any polymerizable moiety. There was also no clear distinction between the "polymerizable moiety" and the "rest of the compound". Hence, claim 1 did not comply with the requirement of clarity.

(b) Article 56 EPC

Document D25 was a suitable starting point for the assessment of inventive step. The primer composition defined in claim 1 of the main request differed from the product disclosed in D25 in that at least one of the components contained a curing agent. The technical problem was the provision of a kit containing the same substances as the product of D25 that resulted in a faster polymerisation. Document D25 explained in column 7 that the primer composition could be cured by the addition of curing agents such as photo-initiators. Thus, the subject-matter of claim 1 was obvious on the basis of the teaching of D25 considered alone.

The same conclusion could be drawn if the prior use of the product Ecusit® Primer-Mono was considered as the most relevant prior art. The composition of claim 1 differed from this product in that in component i) the polymerizable group was linked to the rest of the molecule by an amide moiety. The experimental reports filed by the appellant-patent proprietor were no evidence that the presence of the amide linkages resulted in an improvement of the adhesion strength. Indeed, as shown in the experimental report D28, the products compared by the appellant-patent proprietor in the tests described in D21 and D27 differed not only in the presence of an amide group as linking moiety but also in the number of polymerizable moieties. Hence, the technical problem was the provision of a primer in which the polymerizable moiety was linked to the rest of the molecule in an alternative manner. Document D25 described products wherein the polymerizable moiety was linked to the backbone of the molecule by an amide linkage. Thus, the subject-matter of claim 1 was obvious in view of the prior use the product Ecusit® Primer-Mono considered in combination with the teaching of D25.

XII. The arguments presented in writing by the appellant-patent proprietor with regard to the new main request (filed with letter dated 31 March 2014 as first auxiliary request) can be summarised as follows:

(a) Article 84 EPC

Feature i) of claim 1 referred to a "polymerizable compound". It was clear that in order to be polymerizable this compound had to include a polymerizable moiety. Thus, the introduction in claim 1

of the expression "the polymerizable moiety" did not result in any lack of clarity.

(b) Inventive step

The product of claim 1 was characterised by the presence of amide linkages linking the polymerizable moieties to the rest of the molecule whereas the product Ecusit® Primer-Mono contained ester linkages. As acknowledged by the opposition division, the experiments of the appellant-patent proprietor showed that this difference resulted in an increase of the adhesion strength. This effect was not suggested in any of the prior art documents. The counter experiments carried out by the appellant-opponent were of no relevance at least because the products tested were highly contaminated. Thus, the main request complied with the requirements of Article 56 EPC.

XIII. In view of its letter sent on 10 October 2018 (see point IX above), the appellant-patent proprietor final requests can be expressed as follows:

The appellant-patent proprietor requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request, filed with letter dated 31 March 2014 as first auxiliary request, or on the basis of one of auxiliary requests 1 and 2, also filed with letter dated 31 March 2014 as 2nd and 3rd auxiliary request respectively.

XIV. The appellant-opponent requested that the decision under appeal be set aside and that European patent No. 0 973 482 be revoked.

Reasons for the Decision

Main request (filed on 31 March 2014 as first auxiliary request)

1. Article 84 EPC

1.1 In the appellant-opponent's opinion, the introduction in claim 1 of the main request of the feature "wherein the polymerizable moiety is connected to the rest of the compound through an amide functionality" results in a lack of clarity of the claim. In this regard it observes that claim 1 does not define any "polymerizable moiety". Accordingly, it would not be clear which moiety is linked to "the rest of the compound" through an amide bond. Furthermore it would not be clear how to distinguish this moiety from "the rest of the compound".

1.2 Indeed the first part of claim 1 does not refer to any "polymerizable moiety". It is however evident that an acidic polymerizable compound must contain at least a polymerizable moiety. Thus, the Board considers that introducing in claim 1 a feature referring to a "polymerizable moiety" does not result in a lack of clarity for the reason that this expression is not defined in the first part of the claim. Furthermore a chemical bond must necessarily link two parts of a molecule. The expression "rest of the compound" is merely used in claim 1 to identify one of the two end-points of the amide linkage the other one being the "polymerizable moiety". The skilled person would have no difficulties in understanding the meaning of this expression.

1.3 In the light of the considerations set out above, the Board concludes that the main request meets the requirements of Article 84 EPC.

2. Public availability of the product Ecusit® Primer-Mono

2.1 D1 is an invoice dated 26 February 1996 sent by DMG Hamburg to Sweden & Martina SpA. It relates to the delivery of various products including 10 pieces of Ecusit® Primer-Mono having item no. 210875 (page 4 of D1, position 27).

D2 is a delivery note dated 26 February 1996 addressed by DMG Hamburg to Sweden & Martina SpA. It refers *inter alia* to the delivery of 10 pieces of Ecusit® Primer-Mono having item no. 210875 and batch no. 95280127 (Page 5 of D2, position 27). D2 reports that Ecusit® Primer-Mono was "despatched today", i.e. on 26 February 1996.

Document D3 is a document prepared in the warehouse department of DMG Hamburg. It contains a list of the products packaged for the customer Sweden & Martina SpA. The list refers *inter alia* to 10 pieces of Ecusit® Primer-Mono having item no. 210875 and charge no. 95280127 and bears the date of 23 February 1996.

2.2 The Board considers that D1 to D3 is convincing evidence that the the product Ecusit® Primer-Mono was delivered to the company Sweden & Martina SpA on 26 February 1996, i.e. before the priority date of the patent-in-suit of 11 April 1997.

2.3 The appellant-patent proprietor argues that it cannot be excluded that a secrecy agreement existed between

DMG Hamburg and Sweden & Martina SpA. This circumstance is however excluded in the affidavits of Mr Müller (D17) and Ms Nickels-Thomsen (D18), two employees of the company DMG Hamburg. In this regard it is also observed that the line of products Ecusit®-System was advertised before the priority date of the patent (see D12). Ecusit® Primer-Mono belonged to this line of products (see D18).

2.4 In conclusion, the opposition division was correct in deciding that Ecusit® Primer-Mono was available to the public before the priority date of the patent-in-suit.

3. Inventive step

3.1 Closest prior art

3.1.1 The Board shares the view of the appellant-patent proprietor and of the opposition division that the public prior use of Ecusit® Primer-Mono is the closest prior art.

The acidic polymerizable compound of the product defined in claim 1 of the auxiliary requests is characterized by the presence of an amide bond between the polymerizable moiety and the backbone of the molecule whereas in Ecusit® Primer-Mono the polymerizable compound contains ester bonds.

3.1.2 Document D25, proposed by the appellant-opponent as alternative closest prior art, is less close to the subject-matter of claim 1 than the prior use.

Indeed example 1 of D25, referred to by the appellant-opponent, describes a product comprising an etchant (corresponding to present component B) and a

standard primer (corresponding to present component A). However, neither the etchant nor the standard primer contains a curing agent. The curing agent is apparently included in a further component, the curable adhesive, applied after the standard primer (see column 7, lines 62 to 65 and column 10, lines 57 to 66). The application of the composition of D25 requires several steps including an etching treatment (see column 1, lines 36 to 51). In contrast thereto the composition of claim 1 and Ecusit® Primer-Mono can be applied in a single step.

Thus, the public prior use of the product Ecusit® Primer-Mono is the closest prior art for the assessment of inventive step.

3.2 Technical problem

3.2.1 The experimental report D21 shows that a composition containing a polymer with amide linkages (example 1) provides better results in terms of adhesion strength than a composition containing a polymer with ester linkages (example 2).

3.2.2 Following a criticism expressed by the appellant-opponent (letter of 17 June 2013) the appellant-patent proprietor filed during the first instance proceedings a further experimental report (D27). In this report the process for preparing the comparative product with ester linkage was modified in order to result in a product containing the same percentage of methacrylic moieties as the product of claim 1 with amide linkages. The results reported in D27 confirm that a polymer with amide linkages imparts better adhesive properties to the composition.

- 3.2.3 As noted in the appealed decision the polymers compared in D21 and D27 differ not only in the presence of amide or ester bonds but also in the structure of the backbone of the polymer. The opposition division concluded however, that the difference in the structure of the backbone did not affect the adhesive properties of the products (point 73.1). This conclusion was not disputed by the appellant-opponent and the Board sees no reason to take a different view.
- 3.2.4 During the appeal proceedings the appellant-opponent has filed the experimental report D28. The objective of the experiment described in this report is to demonstrate that the products compared by the appellant-patent proprietor in D21 and D27 do not contain the same percentage of methacrylic moieties. In the appellant-opponent's opinion, the polymer containing amide linkage contains a higher amount of methacrylic moieties. Thus, the improvement of adhesion observed for the compositions containing this polymer should be ascribed to the presence of these additional methacrylic moieties rather than to the replacement of ester linkages by amide linkages.
- 3.2.5 The Board notes that the appellant-opponent has apparently prepared in the experiments of D28 a polymer containing amide linkages using polyacrylic acid as starting material (see on page 1 preparation of Polymer A4). The polymer prepared by the appellant-patent proprietor in D21 and D27 is different in that the starting material used is the copolymer of example 11 of D24 (see example 1 of D21). Furthermore, the polymer containing ester linkages prepared by the opponent in D28 contains various impurities such as unreacted HEMA (see page 2 of D28). The appellant-patent proprietor explains that the products used in the experiments of

D21 and D27 were less contaminated than the products used in D28.

In view of these shortcomings the Board takes the view that the experimental report D28 does not call into question the relevance of the experiments of D21 and D27.

- 3.2.6 Accordingly, on the basis of the evidence on file it is credible that polymers containing an amide linkage impart better adhesive properties to the dental composition than polymers containing an ester linkage.

The technical problem is therefore the provision of a multi-part dental primer composition with increased adhesion.

3.3 Obviousness

- 3.3.1 None of the cited documents suggests that this technical problem could be solved by providing dental primer compositions in which the polymerizable compound contains amide linkages. In particular, this teaching cannot be derived from document D25. Indeed this document describes dental compositions comprising a polymerizable compound containing amide linkages. However, it does not indicate that these linkages have a positive effect on the strength of the adhesion.
- 3.3.2 It follows from the considerations set out above that the main requests complies with the requirements of 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 department of first instance with the order to maintain the patent on the basis of the main request, filed with letter dated 31 March 2014 as first auxiliary request and a description to be adapted.

The Registrar:

The Chairman:



B. Atienza Vivancos

J. Riolo

Decision electronically authenticated