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**D E C I S I O N**  
**of 17 December 2004**

**Case Number:** T 0945/99 - 3.3.2

**Application Number:** 92912026.9

**Publication Number:** 0588878

**IPC:** A61K 6/083

**Language of the proceedings:** EN

**Title of invention:**

Universal water-based medical and dental cement

**Patentee:**

Minnesota Mining and Manufacturing Company

**Opponent:**

Thera Patent GmbH & Co. KG Gesellschaft für industrielle  
Schutzrechte

**Headword:**

Dental cement/MINNESOTA MINING AND MANUFACTURING COMPANY

**Relevant legal provisions:**

EPC Art. 54, 111

EPC R. 67

**Keyword:**

"Main request - novelty - no: restrictive feature in the  
description does not limit the scope of the claim"

"Remittal for further prosecution - yes - opposition division  
did not examine auxiliary requests presented"

"Reimbursement of appeal fee - no: appeal not allowed"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0945/99 - 3.3.2

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.2**  
**of 17 December 2004**

**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  
26 July 1999 concerning maintenance of European  
patent No. 0588878 in amended form.

**Composition of the Board:**

**Chairman:** U. Oswald  
**Members:** J. Riolo  
P. Mühlens

## Summary of Facts and Submissions

I. European patent No. 0 588 878, based on application No. 92 912 026.9, was granted on the basis of 23 claims comprising three independent claims, namely claims 1, 21 and 22.

Independent claims 1, 21 and 22 as granted read:

"1. A water-containing, ionically-hardenable, photocurable, ethylenically-unsaturated dental cement, comprising

- a) finely-divided acid-reactive filler,
- b) water-miscible acidic polymer,
- c) photoinitiator,
- d) water-soluble reducing agent, and
- e) water-soluble oxidizing agent."

"21. A dental cement powder, comprising finely-divided acid-reactive filler, water-soluble reducing agent and water-soluble oxidizing agent, at least one of the agents being microencapsulated."

"22. A dental cement liquid, comprising water-miscible acidic polymer, water-soluble reducing agent and water-soluble oxidizing agent, at least one of the agents being microencapsulated."

II. Notice of opposition was filed against the granted patent. The patent was opposed under Article 100(a) EPC for lack of novelty and lack of an inventive step.

The following documents were cited during the proceedings before the opposition division and the board of appeal:

- (1) EP-A-0 323 120
- (2) GB-A-2 228 001
- (3) GB-A-2 189 793

III. The interlocutory decision of the opposition division established that the patent could be maintained in an amended form under Article 106(3) EPC on the basis of the text of the fourth auxiliary request.

The opposition division considered that the claims of the patent-in-suit (main request) did not meet the requirements of novelty.

It took the view that the subject-matter of claim 1 of the patent in suit was not novel over example 4 of document (2). It found this example disclosed a water containing, ionically-hardenable, photocurable, ethylenically-unsaturated dental cement, comprising

- a) finely divided acid-reactive filler (glass powder)
- b) water-miscible acidic polymer (polyacrylic acid)
- c) photoinitiator (camphorquinone)
- d) water soluble reducing agent (4-dimethyl-aminoisoamylbenzoate) and
- e) water soluble oxidising agent (benzoyl peroxide)

In the light of the comparative experiments provided by the opponent on 2 July 1997, it considered that the water solubility of benzoyl peroxide was sufficient to enable, together with the 4-dimethylaminoisoamyl-

benzoate (reducing agent), the formation of radicals to start polymerisation in the absence of light.

It did not admit auxiliary requests 1 to 3 into the proceedings as being filed after the deadline laid down in Rule 71a EPC.

In that respect, it pointed out that, in its communication dated 13 August 1998, the opposition division had given a preliminary opinion highlighting the particular relevance of example 4 of document (2) and that there was enough time up to the deadline according to Rule 71a EPC (ie more than nine months) to file any requests in response to this communication.

It further found that the fact that the opponent had filed further experimental results to support the earlier ones did not justify the late filing.

It added that the late filing of an auxiliary request could have been justified if it had overcome prima facie at least one of the grounds of opposition; but this was not the case for auxiliary requests 1 to 3.

As regards auxiliary request 1, which differed from the claim of the main request by the presence of a disclaimer, it considered that, although this was an attempt to establish novelty over document (2), the disclaimer led to an extension over the original disclosure, because the disclaimer was not disclosed either in the contested patent or in document (2) in this generalised form.

As regards auxiliary requests 2 and 3, which contained four to five lined text insert taken from the description concerning the definition of water soluble, the opposition division considered that its examination for the question whether it would overcome the novelty objection and whether it would extend the protection (Article 123(3) EPC) or the original disclosure (Article 123(2) EPC) necessitated a thorough analysis which was not justified in view of the late stage of the proceedings.

It came therefore to the conclusion not to admit auxiliary requests 1 to 3.

The opposition division admitted auxiliary request 4, in which claims 1 and 10 of the granted claims were combined to form new independent claim 1, to the proceedings, because the objection regarding novelty was prima facie overcome and because there was obviously no problem with the requirements of Article 123(2) EPC.

The opposition division considered that the subject-matter of claim 1 of auxiliary request 4 was novel over document (2), the sole document relevant for the question of novelty, since the oxidising agents mentioned in claim 1 of this request were not mentioned in document (2).

As regards inventive step, the opposition division submitted that document (2) was not relevant in view of the technical problem of bringing about curing even in the absence of light.

It regarded document (1) as the closest prior art and considered that the skilled person would not combine the teaching of document (3) with that of document (1) with any reasonable expectation of success.

It therefore decided to maintain the patent in suit on basis of auxiliary request 4.

IV. The appellant (patentee) lodged an appeal against the said decision.

V. Oral proceedings were held before the board on 17 December 2004.

VI. The submissions of the appellant can be summarised as follows:

The appellant submitted that the decision was not reasoned within the meaning of Rule 68(2) EPC in that the opposition division had not examined whether example 4 of document (2) contained a water-soluble reducing agent and a water-soluble oxidizing agent.

As regards the admissibility of the auxiliary requests, the appellant submitted that the opposition division had not complied with the obligation to examine whether the auxiliary requests could have overcome the grounds for opposition and that the opposition division was not prepared to discuss auxiliary requests 1 to 3 with the parties.

The appellant further submitted that Rule 71a EPC referred exclusively to new facts and evidence and that auxiliary requests were not facts.

As regards novelty, the appellant argued that document (2) did not disclose a **water soluble** oxidising agent capable of forming a redox pair with the reduction agent.

It submitted that water-soluble was a relative term which depended on other components. It submitted that the first test on page 2, lines 43 to 46 of the patent in suit was only a preliminary test to roughly select potential redox pairs and pointed out that it was the second test on page 4, lines 46 and 47 of the patent in suit which determined whether suitable solubility was provided.

The appellant stressed that when example 4 of document (2) was repeated, but without addition of the filler, no polymerisation was observed.

It also drew attention to page 8, lines 9 to 12 of the patent in suit, where benzoyl peroxide was discussed in the context of the invention and where it was stated that it did not fulfil the requirement of water-solubility for the purpose of the present invention.

Finally it argued that the burden of proof lies on the opponent to prove that an example in the prior art is novelty-destroying.

- VII. The appellant requested that the decision under appeal be set aside and that the patent be maintained unamended (main request), or, as auxiliary request, that the case be remitted to the first instance for further prosecution on the basis of auxiliary



requests 1 to 3 corresponding to auxiliary requests 1 to 3 presented before the opposition division during the oral proceedings, and that the appeal fee be reimbursed.

### **Reasons for the decision**

1. The appeal is admissible.

2. *Main request: novelty.*

2.1 Claim 1, which is a product-claim, is directed to a composition, which can be analysed as follows.

The composition comprises

- (a) finely-divided acid-reactive filler,
- (b) water-miscible acidic polymer,
- (c) photoinitiator,
- (d) water-soluble reducing agent, and
- (e) water-soluble oxidizing agent.

In addition to components (a), (b), (c), (d), (e), the composition contains

- (f) water,
- (g) at least one ethylenically-unsaturated moiety.

It has moreover the properties of being

- (h) ionically-hardenable, and (i) photocurable.

2.2 Example 4 of document (2) discloses a cured glass ionomer cement composition prepared by light curing a mixture of 2.5 g of a cement powder comprising 100g of a fluoroaluminosilicate glass powder, 0.5g camphor quinone, 0.5g of benzoyl peroxide, 0.5g 4-dimethylaminoisoamyl benzoate acting as a reducing

agent (see document (2) on page 4) and a liquid cement comprising 30 g of polyacrylic acid having an average molecular weight of 40000, 30g of di-1-methyl-2-methacryloxyethyl-trimethylhexamethylene dicarbamate, 40g of distilled water, 1.5g of polyoxyethylene sorbitol monolaurate ester and 0.5g of decaglycerin monostearate ester.

This composition was exposed for 30 seconds to light from a Luxor visible light irradiator having a tungsten halogen lamp to cure the glass ionomer cement (the composition is thus photocurable).

Furthermore, this composition is ionically-hardenable, since the composition is also described as an "ionomer" cement (see page 3, lines 9 to 16 in the general part of the description of document (2)).

- 2.3 Thus, document (2) discloses an ionically-hardenable (h), photocurable dental cement (i), which contains at least one ethylenically-unsaturated moiety (ie polyacrylic acid polymer and di-1-methyl-2-methacryloxyethyl-trimethylhexamethylene dicarbamate (g) comprising
- (a) finely-divided acid-reactive filler (glass),
  - (b) water-miscible acidic polymer (polyacrylic acid),
  - (c) photoinitiator (camphor quinine),
  - (d) reducing agent (4-dimethylaminoisoamyl benzoate).

What is not expressis verbis disclosed in document (2) is that 4-dimethylaminoisoamyl benzoate is water soluble and that the composition contains a water-soluble oxidizing agent.

As it is well recognised that benzoyl peroxide is an oxidizing agent, it remains only to be examined whether (4-dimethylaminoisoamyl benzoate) and benzoyl peroxide can be regarded as a water-soluble compound within the meaning of the contested patent.

- 2.4 Page 4, lines 48 to 53 of the patent in suit reads:  
*"The reducing agent and oxidizing agent preferably are sufficiently water-soluble and have sufficient reduction and oxidation potentials to initiate gelation of an aqueous crosslinkable acrylamide solution. This can be evaluated by adding 2 weight % each of the reducing agent and the oxidizing agent to an aqueous acrylamide:methylene bis-acrylamide solution (described below in Table Ia) and observing whether or not gelation occurs within 30 minutes. Useful reducing agent/oxidizing agent pairs are shown in "Redox Polymerization", G. S. Misra and U. D. N. Bajpai, Prog. Polym. Sci., 8, 61-131 (1982)".*
- 2.5 In order to show that the benzoylperoxid and the 4-dimethylaminoisoamylbenzoate fulfil the requirement of water solubility, the opponent, with its notice of opposition of 2. July 1997, filed a solubility test in which 2 weight % each of benzoylperoxid and 4-dimethylaminoisoamylbenzoate was added to an aqueous acrylamide:methylene bis-acrylamide solution. Gelation was observed within 4 1/4 minutes, showing that the solubility test was met.
- 2.6 Under these circumstances, the board concludes that benzoylperoxid and 4-dimethylaminoisoamylbenzoate is in fact a water soluble compound according to the definition of the patent in suit.

Accordingly, example 4 of document (2) is novelty-destroying for claim 1 of the main request.

- 2.7.1 The appellant submitted that benzoyl peroxide is not used as the oxidizing agent of an oxidation-reduction pair but only as an accelerator for the photocure system used in document (2).

This argument is, however, not relevant, since claim 1 is directed to a product per se. In fact, the purpose for which benzoyl peroxide was employed in the composition of document (2) is of no relevance for the assessment of novelty of a product claim.

As benzoyl peroxide is an oxidizing agent, its presence, independently of its function, in a prior art composition having the same other ingredients anticipates the claimed composition comprising an oxidizing agent.

- 2.7.2 The appellant further submitted that the test of solubility performed by the opponent was only a preliminary test to roughly select potential redox pairs.

The important test to be met by a given pair is the one described on page 4, lines 41 to 51 of the contested patent where it is stated that "*The water-soluble reducing agent and water-soluble oxidizing agent are most conveniently discussed together. They should react with or otherwise cooperate with one another to produce free-radicals capable of initiating polymerization of the ethylenically-unsaturated moiety. They should be*

*sufficiently water-soluble to permit ready dissolution in (and discourage separation from) the other components of the cement. The reducing agent and oxidizing agent should also be sufficiently soluble and present in an amount sufficient to permit an adequate free-radical reaction rate. This can be evaluated by combining all of the ingredients of the cement except for the filler under safelight conditions, and observing whether or not a hardened mass is obtained."*

In this respect it filed an experiment wherein example 4 of document (2) was repeated under similar conditions (ie two components were different and a filler was missing) showing that the pair benzoyl peroxide with 4-dimethylamino ethyl benzoate was not able to achieve redox-initiated free radical crosslinking of the ethylenically unsaturated components.

It should moreover be noted that claim 1 of the patent in suit does not require that the cement should be curable via a redox-initiated free radical mechanism.

In that respect, the appellant referred to page 2, lines 43 to 46 of the patent in suit wherein it is stated that the claimed cement has three curing modes. It should be able to cure via an acid-filler ionic reaction, via photoinitiated free radical crosslinking of the ethylenically-unsaturated component and via redox-initiated free radical crosslinking of the ethylenically-unsaturated component.

Although only the two first curing modes are reflected in the claims, the respondent contends that the third

curing mode is also a technical feature of claim 1 on account of this passage of the description.

The board cannot agree with these submissions. Article 84 EPC, first sentence reads "*the claims shall define the matter for which protection is sought*". Accordingly, a restrictive characteristic which is not in the claim cannot be taken into account for assessing novelty of the claim, although this technical characteristic is present in the description.

Under these circumstances, the board concludes that claim 1 of the main request is anticipated by the disclosure in document (2). There is therefore no need to consider the remaining claims.

3. *Auxiliary requests 1 to 3*

3.1 Auxiliary request 1: admissibility

The subject-matter of independent claim 1 of the first auxiliary request differs from that of claim 1 of the main request in that it contains a disclaimer excluding benzoyl peroxide in order to restore novelty over document (2).

Accordingly, the board judges that this set of claims fulfils the requirements of Rule 57a EPC.

Moreover, the board does not consider this request as late filed, because the notice of appeal referred explicitly to it.

3.2 Auxiliary requests 2 and 3

The conclusions of point 3.1 hold good for auxiliary requests 2 and 3 as well, since these requests are directed to compositions wherein the water soluble component has been further restricted in order to provide novelty over document (2).

4. *Remittal to the department of first instance*

4.1 Although Article 111(1) EPC does not guarantee the parties an absolute right to have all the issues in the case considered at two instances, that may well be appropriate as regards essential issues. The essential function of an appeal is to consider whether the decision issued by the first-instance department is correct. Hence, a case is normally referred back if essential questions regarding the patentability of the claimed subject-matter have not yet been examined and decided by the department of first instance.

The board notes that the allowability under Article 123(2) EPC of the disclaimer in auxiliary request 1 and the amendments in auxiliary requests 2 and 3 was not decided by the department of first instance. Nor did the latter assess whether the amendment in question had restored novelty and inventive step.

In view of the board's decision to reject the main request for lack of novelty, the presence of the disclaimer and any further characteristics restricting a component of the claimed compositions now has to be

considered as an essential substantive issue in the present case.

4.2 Thus, in view of the above considerations, the board has reached the conclusion that it is necessary to remit the case to the first instance for further prosecution on the basis of the set of claims according to auxiliary requests 1-3 filed during the oral proceedings.

5. *Request for the reimbursement of the appeal fee*

Since the board did not allow the appeal filed by the appellant (see main request, point 2 above), it follows that the request for the reimbursement of the appeal fee has to be rejected (Rule 67 EPC).

## **Order**

### **For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution.
3. The request for reimbursement of the appeal fee is rejected.

The Registrar:

The Chairman:

A. Townend

U. Oswald