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**Datasheet for the decision
of 21 January 2022**

Case Number: T 0077/18 - 3.3.07

Application Number: 03254200.3

Publication Number: 1396254

IPC: A61K6/00, A61K6/083

Language of the proceedings: EN

Title of invention:

Prepolymerized filler in dental restorative composite

Patent Proprietor:

Kerr Corporation

Opponent:

RPE GmbH

Headword:

Dental composite / KERR CORPORATION

Relevant legal provisions:

EPC Art. 54, 56, 100(c)

Keyword:

Novelty - implicit disclosure (no)

Inventive step - (yes)

Grounds for opposition - late-filed ground for opposition

Decisions cited:

G 0010/91

Catchword:

The respondent's requests regarding the ground for opposition under Article 100 c) EPC confront the Board with the issue of admittance of a new ground for opposition which was raised during the oral proceedings before the opposition division but had deliberately not been decided upon by the opposition division. In the absence of a positive decision on admittance by the opposition division, the Board considers that the ground for opposition under Article 100 c) EPC should be treated as a fresh ground at the appeal stage and its admittance should be governed by the principles set forth in G 10/91, which require the proprietor's consent for its introduction in the appeal proceedings. In view of the appellant's refusal thereto, the ground for opposition under Article 100 c) is not to be introduced in the appeal proceedings.



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 0077/18 - 3.3.07

D E C I S I O N
of Technical Board of Appeal 3.3.07
of 21 January 2022

Appellant: Kerr Corporation
(Patent Proprietor) 1716 West Collins Avenue
Orange,
California 92867 (US)

Representative: Findlay, Alice Rosemary
Reddie & Grose LLP
The White Chapel Building
10 Whitechapel High Street
London E1 8QS (GB)

Respondent: RPE GmbH
(Opponent) Weinstrasse 8
80333 Munich (DE)

Representative: Schiener, Jens
Wächtershäuser & Hartz
Patentanwaltpartnerschaft mbB
Weinstraße 8
80333 München (DE)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 6 November 2017
revoking European patent No. 1396254 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman A. Usuelli
Members: M. Steendijk
A. Jimenez

Summary of Facts and Submissions

- I. European patent 1 396 254 ("the patent") was granted on the basis of thirty-one claims.

The independent claim 1 as granted related to:

"A dental composite comprising a polymerizable resin base and 10% by volume to 80% by volume filler comprising a ground structural filler, a prepolymerized filler, and a nanofiller, wherein the structural filler comprises between 10% by volume and 70% by volume of the composite and consists of particles that have been ground to a mean particle size between 0.05 μm and 0.50 μm , wherein the ground structural filler contains less than 50% by volume of particles above 0.5 μm in diameter, wherein the prepolymerized filler comprises at least 1% by volume of the composite and consists of an inorganic portion and a polymerized organic resin portion, and wherein the nanofiller comprises at least 0.01% by volume of the composite, the nanofiller comprising discrete, non-aggregated particles of mean particle size less than 100 nm."

Claim 17 as granted related to:

"A method of making a dental composite paste for use in restoring a tooth, the method comprising preparing a prepolymerized filler by mixing an inorganic filler with an organic polymerizable resin, curing the mixture, and then grinding the cured mixture, providing a structural filler consisting of particles that have been ground to a mean particle size between

0.05 μm and 0.50 μm , wherein the ground structural filler contains less than 50% by volume of particles above 0.5 μm in diameter, providing a discrete nanofiller comprising discrete, non-aggregated particles of mean particle size less than 100 nm, mixing the structural filler, prepolymerized filler and discrete nanofiller with a polymerizable resin base to form a dental composite paste having a total filler loading between 10% by volume and 80% by volume, wherein the structural filler comprises between 10% by volume and 70% by volume of the composite paste, the prepolymerized filler comprises at least 1 % by volume of the composite paste, and the discrete nanofiller comprises at least 0.01 % by volume of the composite paste."

- II. The patent was opposed on the grounds that the claimed subject-matter was not new and lacked an inventive step under Article 100 a) EPC. The appeal was filed by the patent proprietor against the decision of the opposition division to revoke the patent.

The decision was based on the main request relating to the patent as granted and auxiliary requests 1-6 submitted during the oral proceedings held on 15 September 2017.

In its decision the opposition division cited *inter alia* the following documents:

- D1 : JP2000-080013 (English machine translation)
- D2 : JPH05-194135 (English machine translation)
- D8a : Technical Bulletin Pigments: Basic Characteristics of Aerosil, Number 11, 5th edition, 1997 (Degussa, Germany)

D11 : EP-A-1 005 911

The opposition division came to the following conclusions:

- (a) The subject-matter of claim 1 of the patent as granted was not new in view of document D1. Examples 6 and 7 of this document described dental composites comprising methacrylate or acrylate monomer as polymerizable resin base, a strontium glass powder with a mean particle diameter of 0.5 μm as structural filler, an organic-inorganic composite as prepolymerized filler and Aerosil R972 as nanofiller. From document D8a, page 27 Figure 22 it was concluded that Aerosil R972 comprised discrete primary particles, aggregates and agglomerates. Document D1 further mentioned grinding for the preparation of glass powders. The feature of less than 50% by volume of particles being larger than 0.5 μm was implicit in the definition of the mean size of the particles in document D1. The amounts of the components expressed in document D1 as concentration in weight percentage fell within the ranges for the amounts defined in the patent in percentage by volume concentrations taking account of expected values of the densities of the components.
- (b) Amended claim 14 of auxiliary request 1 introduced a feature regarding the limited shrinkage of the composite upon curing which was not clear. The same objection applied with respect to auxiliary requests 2 and 3.
- (c) Claim 1 of auxiliary request 4 was not objectionable under Articles 123 and 84 EPC. The

subject-matter of this claim was new over document D1 due to the further definition of the particle size distribution of the prepolymerized filler.

No effect of this differentiating feature with respect to the exemplified composites of document D1 had been shown. The objective technical problem was seen in the provision of an alternative dental composite.

To the skilled person the defined subject-matter would be obvious as solution in view of the teaching in documents D1 and D2. These documents described prepolymerized fillers for dental composites with a mean particle size of up to 50 μm . The particles with the size distribution defined in claim 1 of auxiliary request 4 represented an arbitrary and therefore obvious selection. Accordingly, the subject-matter of claim 1 of auxiliary request 4 did not involve a inventive step.

- (d) The subject-matter of Claim 1 of auxiliary requests 5 and 6 did not involve an inventive step for the same reason as set out for claim 1 of auxiliary request 4.

III. The following additional documents have *inter alia* been cited during the appeal procedure:

D1a: US6221931

D1b: Partial English manual translation of JP2000-080013

Document D1a, the US equivalent of JP2000-080013, was cited by the appellant in the statement of grounds of

appeal. Document D1b was filed by the respondent with its letter of 20 December 2021.

- IV. With the statement of grounds of appeal the appellant filed auxiliary requests 1-12.

In its reply to the appeal the respondent requested that the ground for opposition under Article 100 c) EPC be considered in the appeal proceedings.

In its letter of 16 October 2019 the appellant denied consent to the introduction of this ground for opposition.

- V. In a communication pursuant to Article 15(1) RPBA issued on 22 October 2020 the Board expressed its preliminary opinion that the subject-matter defined in claim 1 of the patent as granted appeared to comply with the requirements of novelty and inventive step.

Oral proceedings were held on 21 January 2022 by way of a videoconference.

- VI. The arguments of the appellant relevant to the present decision can be summarized as follows:

Document D1 described dental composites comprising a strontium glass powder of a mean particle diameter of 0.5 μm . The composite defined in claim 1 as granted differed *inter alia* from the composites as exemplified in examples 6 and 7 of document D1 in the feature of the structural filler having less than 50% by volume of particles larger than 0.5 μm . As could be shown by calculation, this feature was not inherent in the definition of the mean particle diameter of 0.5 μm in document D1.

According to the patent the use of a structural filler with particles of smaller diameters improved luster and translucency of the composite required for cosmetic restorations, which was not obvious from the prior art. In line with the equivalent US disclosure (D1a) document D1 explicitly taught to avoid using a structural filler with a mean particle diameter smaller than 0.5 μm , because with such a filler esthetics tended to be inferior due to turbidity and opalescence.

The ground for opposition under Article 100 c) EPC represented a fresh ground for opposition in the appeal proceedings. This ground had not been raised in the notice for opposition and the opposition division had not decided to admit this ground. As the appellant did not consent to its introduction in the appeal proceedings, this fresh ground for opposition should not be considered by the Board. The raised fresh ground further concerned amendments in claim 17 as granted with respect to claim 19 as originally filed, which merely involved the deletion of the term "about" in relation with numerical definitions and the omission of a non-essential limitation regarding the shrinkage upon curing. These amendments did evidently not violate Article 123 (2) EPC.

VII. The arguments of the respondent relevant to the present decision can be summarized as follows:

Document D1 described in its examples 6 and 7 dental composites comprising a polymerizable resin base, a structural filler with a mean particle diameter of 0.5 μm , a prepolymerized filler and a nanofiller. These exemplified composites were covered by the definition of the composite in claim 1 as granted. Taking account

of the requirement of a narrow particle size distribution in dental composites the feature of the structural filler having less than 50% by volume of particles larger than 0.5 μm in claim 1 as granted was inherent to the mean particle size of the structural filler of 0.5 μm as described in document D1.

No particular effect with respect to the composites of document D1 had been shown for the composite of claim 1 as granted. The patent further only associated an alleged effect on translucency and luster with the mean particle size and not with any particular size distribution. The problem solved could therefore only be seen the provision of an alternative.

In the context of dental composites as described in document D1 a filler with a narrow size distribution would represent an obvious choice for the skilled person and lead to a composite as defined in claim 1 as granted. Document D1 did not describe fillers with particles of a mean diameter below 0.5 μm as unsuitable for use in the composites. As clarified in the manual translation (D1b) document D1 merely mentioned a tendency towards poorer esthetics due to the occurrence of cloudiness and an opal-like appearance when the average particle size is less than 0.5 μm . This tendency was bound affect the composite of claim 1 as granted as well and did not teach away from using a structural filler as defined in claim 1 as granted. Document D2 further confirmed that structural fillers with a smaller mean diameter were indeed suitable for use in dental composites. Moreover, document D11 explicitly taught to use fillers with a narrow particle size distribution to minimize the fraction of particles with a size above 0.5 μm , which otherwise produced a non-glossy surface.

The definition of the method of claim 17 as granted differed from claim 19 as originally filed in the omission of the limitation to 2% or less volumetric shrinkage of the composite upon curing and the deletion of the term "about" in relation to defined quantities. As a result of these amendments claim 17 as granted included an embodiment characterized by tremendous volumetric shrinkage upon curing due to a total filler loading of only 11.01% by volume, which was contrary to the teaching of the application as originally filed directed to composites with limited shrinkage. Claim 17 therefore included subject-matter extending beyond the original disclosure. The raised ground for opposition under Article 100 c) EPC was prima facie highly relevant. The raised ground did further not concern a fresh ground for opposition at the appeal stage, because the respondent had already raised the ground during the oral proceedings before the opposition division, during which the appellant had actually filed new auxiliary requests in response.

VIII. The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted or, subsidiarily, that the patent be maintained on the basis of one of the auxiliary requests 1-12 filed with the statement of grounds of appeal.

The appellant objected against the introduction of the ground for opposition under Article 100 c) EPC.

IX. The respondent requested that the appeal be dismissed.

The respondent further requested that the ground for opposition under Article 100 c) EPC be considered during the appeal proceedings.

Alternatively, the respondent requested remittal to the first instance for examination of compliance with the requirement of Article 123 (2) EPC.

Reasons for the Decision

Main request, the patent as granted

1. Novelty
 - 1.1 Claim 1 of the patent as granted defines a dental composite comprising a polymerizable resin base and a filler comprising a ground structural filler, a prepolymerized filler, and a nanofiller. The claim requires that the ground structural filler consists of particles that have been ground to a mean particle size between 0.05 μm and 0.50 μm , wherein the ground structural filler contains less than 50% by volume of particles above 0.5 μm in diameter."
 - 1.2 Document D1 describes in its examples 6 and 7 dental composites comprising a polymerizable resin base, a structural filler with a mean particle diameter of 0.5 μm , a prepolymerized filler and a nanofiller (see D1 page 10 paragraph 25 and page 12 Table 1; compare D1a column 9 lines 41-50 and columns 13-14 Table 1). The glass powder C used in examples 6 and 7 is described in document D1 as a strontium glass powder with a mean particle diameter of 0.5 μm and maximal size of 1.5 μm without further specification of the size distribution (see D1 page 10 paragraph [0023]; compare D1a column 9 lines 19-20).

1.3 The mean particle size of 0.5 μm of the structural filler described in document D1 does according to the Board not imply that this filler contains less than 50% by volume of particles with a diameter above 0.5 μm . On the contrary, in a filler with a mean particle size of 0.5 μm generally more than 50% of the volume will result from particles larger than the mean size of 0.5 μm due to the disproportionate contribution to the volume from the larger particles. As indicated by the appellant this disproportionate contribution from the larger particles can be demonstrated by calculation examples. In this context the Board further observes that document D1 does not refer to a particular narrow size distribution and that even in the case of a narrow size distribution the larger particles still retain, be it to a lesser extent, their disproportionate contribution to the volume.

The Board therefore agrees with the appellant that document D1 does not describe a structural filler consisting of particles with a mean particle size between 0.05 μm and 0.50 μm , wherein the structural filler contains less than 50% by volume of particles above 0.5 μm in diameter, as defined in claim 1 of the patent as granted.

1.4 Accordingly, the Board concludes that the subject-matter of claim 1 as granted is new over the prior art.

2. Inventive step

2.1 The identification of document D1 as closest prior art is not in dispute.

As explained in section 2.3 above, document D1 does not describe the structural filler consisting of particles

with a mean particle size between 0.05 μm and 0.50 μm , wherein the structural filler contains less than 50% by volume of particles above 0.5 μm in diameter.

Paragraphs [0014], [0021] and [0047] of the patent describe that the use of particles having a mean size less than the wavelength of light, in particular less than about 0.5 μm , contributes to the luster and translucency required for cosmetic restorations. The use of a structural filler containing less than 50% by volume of particles above 0.5 μm in diameter is in this context explicitly mentioned as an exemplary embodiment (see paragraph [0014]). The patent further presents actual values for translucency and gloss for test samples in Table 3 (see page 8).

Starting from document D1 the problem to be solved may therefore be seen in the provision of a dental composite in which translucency and luster required for cosmetic restorations are safeguarded.

2.2 As solution to this problem the subject-matter as defined in claim 1 as granted would not seem obvious to the skilled person.

In this context it may be acknowledged that the prior art does not generally dissuade from using structural fillers with mean particles size below 0.5 μm in dental composites. Document D2 refers to a glass powder with a preferred average particle size between 0.1 and 2 μm as suitable for use in a material for dental restorations (see D2 page 6 lines 9-12). Furthermore, document D11 describes a grinding method for producing a dental filler with a mean particle size between 0.05 and 0.5 μm suitable for use in load-bearing dental restorations which have a transparency value above 45

and maintain a glossy appearance required for cosmetic restorations (see D11 paragraphs [0014] to [0015]).

However, document D1 describes that in its composites the use of a glass powder with a diameter smaller than 0.5 μm results in cloudiness and a strong opal-like appearance leading to a tendency of poor aesthetics (see D1 page 8 final section of paragraph [0019], compare document D1a column 7 lines 30-34, see also document D1c). Document D1 thereby explicitly directs the skilled person away from using a structural filler with smaller sized particles on the basis of esthetic considerations. Precisely such a structure filler with smaller sized particles is defined in claim 1 as granted, which requires a mean particle size between 0.05 μm and 0.50 μm with less than 50% by volume of particles above 0.5 μm . Starting from document D1 and faced with the problem to safeguard the translucency and luster required for cosmetic restorations the skilled person would therefore not be motivated by the information in documents D2 or D11 to modify the dental composites of document D1 by using the structural filler as defined in claim 1 as granted.

- 2.3 The respondent contended that the patent does not associate the feature of the size distribution of the particles with a mean particle with the translucency and luster and that the alleged optical properties of the claimed composition lack substantiation. The Board considers these contentions unfounded having regard to the explicit reference to a structure filler containing less than 50% by volume of particles above 0.5 μm in diameter as an exemplary embodiment in paragraph [0014] of the patent and the values for translucency and gloss for tested samples reported in Table 3 on page 8 of the patent.

The Board further rejects the respondent's interpretation that document D1 merely refers to a tendency towards inferior esthetics from the use of a structural filler with a mean particle size below 0.5 and does thereby not teach away from using such fillers. Faced with the problem of providing a dental composite in which the translucency and luster required for cosmetic restorations are safeguarded the skilled person would as a matter of course be deterred from using a type of filler which is explicitly described as tending towards poor esthetics due to the occurrence of cloudiness and a strong opal-like appearance.

- 2.4 Accordingly, the Board concludes that the subject-matter of claim 1 involves an inventive step.
- 3. Admittance of the ground for opposition under Article 100 c) EPC
- 3.1 The ground for opposition under Article 100 c) EPC, had not been raised in the notice for opposition.

During the oral proceedings before the opposition division on 15 September 2017 the opponent raised this ground for opposition for the first time. According to the minutes of the oral proceedings (see section 2.4) the parties were explicitly reminded by the opposition division that, whilst the opponent was given the opportunity to present his arguments regarding the new ground for opposition, this new ground was not yet admitted into the proceedings. Neither the minutes of the oral proceedings nor the decision under appeal indicate that the opposition division at any later stage decided to admit the new ground for opposition.

3.2 The principles as set out in the opinion of the Enlarged Board of Appeal of G 10/91 apply. The Enlarged Board clarified that grounds not properly covered by the notice for opposition should only be considered by the opposition division if *prima facie* for clear reasons such grounds appear to prejudice the maintenance of the patent (see G 10/91 section 16). The Enlarged Board further explained that the purpose of the appeal procedure *inter partes* is mainly to give the losing party a possibility to challenge the decision of the opposition division on its merits and that it is not in conformity with this purpose to consider grounds for opposition on which the decision under appeal has not been based. Fresh grounds for opposition may therefore in principle not be introduced at the appeal stage, but an exception to this principle is justified if the proprietor agrees with the consideration of the fresh ground for opposition and if the Board considers the fresh ground to be already *prima facie* highly relevant (see G 10/91 section 18).

3.3 The respondent argued that the ground for opposition under Article 100 c) EPC should be considered during the appeal proceedings or else by the opposition division following remittal notwithstanding the appellant's denied consent to its introduction into the proceedings, because this ground was not raised for the first time during the appeal proceedings and because this ground was *prima facie* highly relevant with respect to claim 17 as granted.

The Board observes that the respondent's requests regarding the ground for opposition under Article 100 c) EPC confront the Board with the issue of admittance of a new ground for opposition which was raised during the oral proceedings before the

opposition division but had deliberately not been decided upon by the opposition division. However, in the absence of a positive decision on admittance by the opposition division, the Board considers that the ground for opposition under Article 100 c) EPC should be treated as a fresh ground at the appeal stage and its admittance should be governed by the principles set forth in G 10/91, which require the proprietor's consent for its introduction in the appeal proceedings. In view of the appellant's refusal thereto, the ground for opposition under Article 100 c) is not to be introduced in the appeal proceedings.

In any case, for the reason presented in section 3.4 below the Board considers that the raised ground for opposition under Article 100 c) is not prima facie highly relevant and is in line with the principles as set out in G 10/91 not to be introduced in the appeal proceedings irrespective of any consent from the appellant.

- 3.4 The Board observes that the wording of claim 17 as granted essentially corresponds to the wording of claim 19 as originally filed except for the deletion of the term "about" in relation to certain numerically defined features, in particular the defined percentages by volume of the components of the composite, and the omission of the feature "wherein, upon curing, the dental composite paste is adapted to exhibit about 2% or less volumetric shrinkage, as measured by the water buoyancy method."

As argued by the appellant, the deletion of the term "about" in relation to numerical definitions seems a conventional type of amendment, which does not typically result in subject-matter extending beyond the

application as filed. As further pointed out by the appellant, claim 1 defines a composition with the same components as the composition used according claim 17 as granted without any reference to a limited shrinkage of 2% or less. It seems therefore questionable whether the limitation of the volumetric shrinkage to 2% or less as defined in claim 19 as originally filed represents an essential feature in the context of the original disclosure when taken as a whole. The Board is therefore not convinced that the ground for opposition under Article 100 c) EPC as raised by the respondent is *prima facie* highly relevant with respect to granted claim 17 as contended by the respondent.

The Board therefore rejects the respondent's requests for consideration of the ground for opposition under Article 100 c) EPC in the appeal proceedings or else remittal to the opposition division for examination of this ground.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar:

The Chairman:



B. Atienza Vivancos

A. Uselli

Decision electronically authenticated