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**Datasheet for the decision
of 11 December 2024**

Case Number: T 0227/23 - 3.3.07

Application Number: 15178465.9

Publication Number: 2985016

IPC: A61K6/60, A61K6/62, A61K6/77,
A61K6/80, A61K6/887

Language of the proceedings: EN

Title of invention:
DENTAL COMPOSITE MATERIAL HAVING STABLE PASTY PROPERTY

Patent Proprietor:
Shofu Inc.

Opponents:
Ivoclar Vivadent AG
Dentsply DeTrey GmbH

Headword:
Dental composite/SHOFU

Relevant legal provisions:
EPC Art. 100(c), 123(2)

Keyword:
Amendments - allowable (no)

Decisions cited:

G 0001/16



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

Case Number: T 0227/23 - 3.3.07

D E C I S I O N
of Technical Board of Appeal 3.3.07
of 11 December 2024

Appellant: Shofu Inc.
(Patent Proprietor) 11 Kamitakamatsu-cho
Fukuine
Higashiyama-ku
Kyoto 605-0983 (JP)

Representative: Eisenführ Speiser
Patentanwälte Rechtsanwälte PartGmbH
Postfach 31 02 60
80102 München (DE)

Appellant: Ivoclar Vivadent AG
(Opponent 1) Bendererstrasse 2
9494 Schaan (LI)

Representative: Uexküll & Stolberg
Partnerschaft von
Patent- und Rechtsanwälten mbB
Beselerstraße 4
22607 Hamburg (DE)

Appellant: Dentsply DeTrey GmbH
(Opponent 2) De-Trey-Strasse 1
78467 Konstanz (DE)

Representative: Wächtershäuser & Hartz
Patentanwaltspartnerschaft mbB
Weinstraße 8
80333 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
2 January 2023 concerning maintenance of the
European Patent No. 2985016 in amended form**

Composition of the Board:

Chairman A. Usuelli
Members: J. Molina de Alba
 A. Jimenez

Summary of Facts and Submissions

- I. The decision under appeal is the opposition division's interlocutory decision concluding that the European patent as amended according to auxiliary request 1, and the invention to which it relates, met the requirements of the EPC.

In the decision, the opposition division concluded that claim 1 of the main request (patent as granted) added subject-matter. It then admitted auxiliary request 1 and found that this claim request did not add subject-matter and met the requirements of sufficiency of disclosure and inventive step.

- II. The patent proprietor, opponent 1 and opponent 2 each filed an appeal against the decision. As the three parties are both appellants and respondents, in the following they will be referred to as the patent proprietor, opponent 1 and opponent 2.
- III. With its statement of grounds of appeal, the patent proprietor requested that the decision under appeal be set aside and that the patent be maintained as granted (main request). In addition, it filed auxiliary requests 1 and 2, each consisting of a single claim. Auxiliary request 2 was the claim request held allowable by the opposition division.
- IV. In their statements of grounds of appeal, the opponents requested, among other things, that the decision be set aside and that the patent be revoked in its entirety.

- V. With its reply to the opponents' statements of grounds of appeal, the patent proprietor filed additional claims as auxiliary requests 3 to 6.
- VI. The board scheduled oral proceedings, in line with the parties' requests, and gave its preliminary opinion on the case.
- VII. In response to the board's preliminary opinion, the patent proprietor filed further claims as auxiliary requests 7 to 12.
- VIII. Oral proceedings were held before the board in the form of a mixed-mode hearing in which the patent proprietor and opponent 1 attended by videoconference. At the end of the oral proceedings, the board announced its decision.
- IX. The main request and auxiliary requests 1 to 12 each contain a single claim.

Claim 1 of the main request (patent as granted) reads as follows:

"1. A method comprising:

*mixing a polymerizable monomer and a polymerization initiator at a mixing temperature of 1-60°C for a mixing period of 1 minute-24 hours to prepare a mixed polymerizable monomer,
preparing a silane treatment liquid containing 1-40% of silane coupling agent, and 99-60% of organic solvent and/or water by mixing,
charging the silane treatment liquid into a filler in a mixing container,*

mixing the filler and the silane treatment liquid at a mixing temperature of 1-60°C for a mixing period of 1 minute-24 hours to prepare a silanated filler,
preserving the silanated filler in a silanated filler preserving container for 30-600 days of preserving period,
kneading the mixed polymerizable monomer and the silanated filler at a kneading temperature of 5-60°C for a kneading period of 5-40 minutes after charging the silanated filler into the mixed polymerizable monomer, wherein a ratio of the silanated filler to the mixed polymerizable monomer is 0.1-9 parts by weight of the silanated filler to 1 part by weight of the mixed polymerizable monomer,
defoaming the mixed polymerizable monomer and the silanated filler at 5-200 Torr for a defoaming period of 5-30 minutes to prepare a composite material,
preserving 1-8 liters of the composite material in a composite material preserving container at a preserving temperature of 1-25°C for a preserving period of 10 days-1.5 years,
transferring a portion of the composite material into a preserving container having 1-50 cc of volume, and
preserving the transferred composite material in the preserving container having 1-50 cc of volume at a preserving temperature of 1-40°C for a preserving period of 50 days-5 years."

Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the first step of the method contains the following amendment:

"charging a polymerization initiator into a polymerizable monomer in a mixing container, and mixing the polymerizable monomer and the polymerization initiator at a mixing temperature of 1-60°C for a mixing period of 1 minute-24 hours to prepare a mixed polymerizable monomer"

Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 in that it further specifies that the polymerisation initiator is a photoinitiator.

Claim 1 of auxiliary request 3 differs from claim 1 of auxiliary request 2 in that the lower limit of the preservation period in the container having 1 to 50 cc is 100 days.

Claim 1 of auxiliary request 4 differs from claim 1 of auxiliary request 3 in that:

- the step of mixing the polymerisable polymer and the polymerisation initiator is carried out at a temperature of 5 to 30°C for 15 minutes to 10 hours
- the preservation in large containers is carried out at 1 to 8°C in dark for 30 days to 1 year
- the preservation in small containers is carried out at 1 to 25°C in dark for 100 days to 3 years

Claim 1 of auxiliary request 5 differs from claim 1 of auxiliary request 4 in that it further specifies that the filler contains colloidal silica having an average particle size of 1 to 300 nm.

Claim 1 of auxiliary request 6 differs from claim 1 of auxiliary request 5 in that:

- it specifies that the silanated filler is preserved at 5 to 25°C
- the amount of composite preserved in the large containers is 2 to 5 litres
- the small containers have a volume of 2 to 5 cc

Claim 1 of auxiliary requests 7 to 12 differ from claim 1 of auxiliary requests 1 to 6, respectively, in that the step of transferring the composite into the small quantity preserving container is amended as follows:

"filling ~~transferring~~ a portion of the composite material extruded from a nozzle of a filling machine into a preserving container..., and preserving the ~~transferred~~ filled composite material in the preserving container..."

X. The patent proprietor's arguments relevant to the present decision can be summarised as follows.

Claim 1 as granted did not add subject-matter. Its main basis in the application as filed was the specific embodiment in claim 1 read in conjunction with the broader embodiment in claims 8 to 12. A similar basis could be found in the description passages extending from page 6, line 23 to page 8, line 6 and page 4, line 12 to page 6, line 22. Although claim 1 as granted did not contain the feature in claim 1 as filed that the weight ratio of silane coupling agent to filler was 1 to 15, considering the application as a whole, the omission of the feature passed the test set out in Guidelines H-V, 3.1 and met the gold standard.

The application did not teach that a weight ratio of silane coupling agent to filler of 1 to 15 was essential to the invention. Claims 8 to 12 and the

passages on page 22, lines 11 to 15 and page 21, lines 11 to 13 disclosed the basics steps of the method of the invention. They did not limit the method to the use of a specific silanated filler or define any weight ratio of silane coupling agent to filler. In fact, the application taught that the invention could be carried out using weight ratios other than those in claim 1 as filed. For instance, the passage on page 13, lines 8 to 14, disclosed a volume ratio of silane coupling agent to filler that did not correspond to the weight ratio in claim 1 as filed. In addition, the weight ratio of silane coupling agent to filler in the examples was 0.03 or 0.06 rather than 1 to 15. Furthermore, the omission of the weight ratio of silane coupling agent to filler did not require adapting other features in claim 1 as filed since the other steps in the claim were disclosed for any silanated filler.

XI. The opponents' arguments relevant to the present decision can be summarised as follows.

The patent proprietor's arguments on the essentiality and functionality tests were irrelevant since the criterion for assessing added subject-matter was the gold standard.

Claim 1 as granted involved an unallowable intermediate generalisation between claim 1 and claims 8 to 12 as filed. It defined an undisclosed embodiment resulting from the arbitrary omission of features in claim 1 as filed. The application as filed disclosed a plurality of alternative embodiments that were not hierarchically related to each other. The embodiments were more specific or more general and contained more or fewer steps, but they were all disclosed independently and at the same level of preference. Therefore, they could not

be combined with each other. Consequently, the embodiment in claim 1 as filed could not be generalised using the embodiment in claims 8 to 12 as filed or similar embodiments in the description. The arbitrary omission of the weight ratio of silanated coupling agent to filler in claim 1 as granted was unallowable since this feature was originally disclosed in combination with other specific working conditions that were maintained, e.g. mixing temperatures and times. The same combination of weight ratios, temperatures and times was also disclosed in other passages of the application, such as claims 2 to 4, page 6, lines 28 to 34 and page 25, lines 24 to 30. It could not be directly and unambiguously derived from the application as filed that the weight ratio of silane coupling agent to filler could be omitted while other working conditions originally disclosed in combination were maintained, as had been done in claim 1 as granted.

XII. The parties' final requests relevant to the present decision were as follows.

- The patent proprietor requested that the decision under appeal be set aside and that the patent be maintained as granted (main request).

Alternatively, it requested that the patent be maintained in amended form on the basis of one of the following claim requests:

- auxiliary requests 1 and 2 filed with its statement of grounds of appeal
- auxiliary requests 3 to 6 filed with the reply to the opponents' statements of grounds of appeal

- auxiliary requests 7 to 12 filed with the letter dated 18 November 2024.

- The opponents requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

In addition, opponent 1 requested that auxiliary request 1 not be admitted into the appeal proceedings and opponent 2 requested that auxiliary requests 1 and 7 to 12 not be admitted into the appeal proceedings.

Reasons for the Decision

1. *Amendments (Article 100(c) EPC) - main request (patent as granted)*

- 1.1 The standard of disclosure to be applied for the assessment of added subject-matter is the gold standard, as last confirmed by the Enlarged Board of Appeal in decision G 1/16 (OJ EPO 2018, A70, Reasons 17 to 20). This standard is defined as:

"what a skilled person would derive directly and unambiguously, using common general knowledge and seen objectively and relative to the date of filing, from the whole of these documents [the application documents] as filed"

The patent proprietor based its case on the allegation that the omission of features in claim 1 as granted passed the test in Guidelines H-V, 3.1 (March 2024

edition). However, as noted by opponent 2, the test proposed in Guidelines H-V, 3.1 cannot replace an assessment of added subject-matter based on the gold standard. This is also clear from the wording of Guidelines H-V, 3.1 itself. This provision states firstly that *"if the amendment by replacing or removing a feature from a claim fails to pass the following test by at least one criterion, it necessarily contravenes the requirements of Article 123(2)"*. Later on, it states that *"even if the above criteria are met, the division must still ensure that the amendment by replacing or removing a feature from a claim satisfies the requirements of Article 123(2) as they also have been set out in G 3/89 and G 11/91, referred to in G 2/10 as 'the gold standard'"*. Thus, according to Guidelines H-V, 3.1, the test it proposes is useful for proving that an amendment adds subject-matter but insufficient for proving the contrary, the relevant criterion remaining the gold standard. It is clear from the wording of Guidelines H-V, 3.1 alone that the test stated there cannot assist the patent proprietor in proving that claim 1 as granted meets the requirements of Article 123(2) EPC. Therefore, in the following, the board focuses on determining whether the method of claim 1 as granted meets the gold standard.

- 1.2 According to the patent proprietor, the primary basis for claim 1 as granted in the application as filed is claim 1. Claim 1 as filed reads as follows:

"1. A method for manufacturing a composite material comprising a filler, a polymerizable monomer, and a polymerization initiator, the method comprising a mixed polymerizable monomer preparing step, a silanation step, a silanated filler preserving step, a composite material preparing step, a composite material

preserving step, a composite material filling step, and a small quantity preserving container preserving step, wherein:

the mixed polymerizable monomer preparing step comprises charging a polymerization initiator into a polymerizable monomer in a mixing container, and mixing the polymerizable monomer and the polymerization initiator at a mixing temperature of 1-60°C for a mixing period of 1 minute-24 hours to prepare a mixed polymerizable monomer,

the silanation step comprises preparing a silane treatment liquid containing 1-40 % of silane coupling agent, and 99-60 % of organic solvent and/or water by mixing them, charging the silane treatment liquid into the fillere [sic] in the container at the ratio of 1-15 parts by weight of a silane coupling agent based on 1 part by weight the filler, and mixing the filler and the silane treatment liquid at mixing temperature of 1-60°C for a mixing period of 1 minute-24 hours to prepare a silanated filler,

the silanated filler preserving step comprises preserving the silanated filler for 30-600 days of preserving period,

the composite material preparing step comprises performing a kneading step and a defoaming step, wherein

the kneading step comprises kneading the mixed polymerizable monomer and a silanated filler at a kneading temperature of 5-60°C for a kneading period of 5-40 minutes after charging the silanated filler into the mixed polymerizable monomer, wherein a ratio of the the silanated filler to the mixed polymerizable monomer is 0.1-9 parts by weight of the silanated filler to 1 part by weight of the mixed polymerizable monomer, and the defoaming step comprises defoaming the mixed polymerizable monomer and the silanated filler at 5-200

Torr for a defoaming period of 5-30 minutes to prepare a composite material, the composite material preserving step comprises preserving 1-8 liters of the composite material prepared in the composite material preparing step at a preserving temperature of 1-25°C for a preserving period of 10 days-1.5 years, the composite material filling step comprises filling the composite material extruded from a nozzle of a filling machine into a small quantity preserving container having 1-50 cc of volume, and the small quantity preserving container preserving step comprises preserving the composite material in the small quantity preserving container at a preserving temperature of 1-40°C for a preserving period of 50 days-5 years."

Claim 1 as granted results from claim 1 as filed by deleting the following three features:

- (i) "charging a polymerisation initiator into a polymerisable monomer in a mixing container"
- (ii) "at the ratio of 1-15 parts by weight of a silane coupling agent based on 1 part by weight the filler"
- (iii) "filling the composite material extruded from a nozzle of a filling machine"

For the reasons explained in the following paragraphs, the board holds that at least the omission of feature (ii) adds subject-matter.

- 1.3 The patent proprietor argued that the method of claim 1 as filed could be generalised by omitting feature (ii) in view of the broader teaching in claims 8 to 12 as

filed and on page 4, line 12 to page 6, line 22. As these passages disclosed a method comprising the essential steps of claim 1 as filed without specifying particular conditions, the condition defined in feature (ii) of claim 1 as filed could be omitted. This view was allegedly supported by the fact that the passage on page 13, lines 8 to 14 and the examples of the application as filed disclosed weight ratios of silane coupling agent to filler outside the range defined in feature (ii): page 13, lines 8 to 14 disclosed a volume ratio of silane coupling agent to filler that did not correspond to the weight ratio defined in claim 1 as filed, and the weight ratio of silane coupling agent to filler in the examples was 0.03 or 0.06 instead of 1 to 15 (see application as filed, page 41, lines 1 to 18). Therefore, it could be derived that feature (ii) was not essential to the invention and that it could be omitted without adding subject-matter.

- 1.4 The board disagrees. As submitted by opponent 2, the application as filed discloses a plurality of independent embodiments with different degrees of generalisation and different numbers of steps but no hierarchical relationship. Therefore, the embodiments cannot be combined with each other without further ado.

On the one hand, the application contains specific embodiments disclosing the working conditions of each method step, namely temperature, time, concentration, weight ratio, pressure and/or volume. This is the case for the embodiments in independent claims 1 to 4 as filed and the passages extending from page 6, line 16 to page 8, line 6. These embodiments define multi-step methods including a silanation step in which a silane treatment liquid containing 1 to 40% of silane coupling agent and 99 to 60% of organic solvent and/or water is

prepared. The silane treatment liquid is then charged into the filler at a weight ratio of silane coupling agent to filler of 1 to 15, and the resulting combination is mixed at 1 to 60°C for 1 minute to 24 hours.

On the other hand, the application discloses broad embodiments which define the essential steps of the method of the invention without specifying any working conditions. This is the case for the method disclosed by the combination of claims 8 to 12 or the passage extending from page 4, line 12 to page 6, line 8. The methods in these embodiments include a step in which a silanated filler is prepared by treating a filler with a silane.

In summary, the application discloses specific embodiments defining method steps and the working conditions for each step and generic embodiments defining only method steps, i.e. without specifying any working condition. The application as filed does not provide a clear teaching on the relationship between the multiple working conditions. It does not indicate which working conditions, if any, can be omitted from the specific embodiments while maintaining the others. With regard to the weight ratio of silane coupling agent to filler, this condition is never disclosed in isolation or in a general manner but always in the context of specific embodiments together with a set of other working conditions. In particular, a weight ratio of silane coupling agent to filler of 1 to 15 was consistently disclosed across the application always in combination with the other working conditions in claim 1 as filed. This is particularly the case for independent claims 1 to 4, the disclosure extending from page 6, line 16 to page 8, line 6, and the passage

on page 25, lines 24 to 30. Therefore, the skilled person would not directly and unambiguously derive that the weight ratio of silane coupling agent to filler of 1 to 15 can be omitted from claim 1 as filed while all or most of the other working conditions are maintained.

The patent proprietor is right that the passage on page 13, lines 8 to 14 and the examples disclose weight ratios of silane coupling agent to filler that do not fall within the range disclosed in the rest of the application as filed, including claim 1. However, this inconsistency cannot be interpreted as meaning that the weight ratio of silane coupling agent to filler in claim 1 as filed is independent from the other working conditions or that it can be varied at will or even omitted. Rather, the inconsistencies on page 13, lines 8 to 14 and in the examples with the rest of the application point to an error for which there is no immediate evident solution. Therefore, the skilled person would not directly and unambiguously derive that the weight ratio in claim 1 as filed can be omitted while maintaining most of the other working conditions.

1.5 Consequently, claim 1 as granted adds subject-matter, and the ground for opposition of Article 100(c) EPC prejudices the maintenance of the patent as granted.

2. *Amendments (Article 123(2) EPC) - auxiliary requests 1 to 12*

Claim 1 of each of auxiliary requests 1 to 12 is also primarily based on claim 1 as filed from which the weight ratio of silane coupling agent to filler is omitted while most of the other working conditions are maintained. Therefore, irrespective of the question of the admittance of auxiliary requests 1 and 7 to 12,

auxiliary requests 1 to 12 add subject-matter for the reasons set out for the main request. Consequently, auxiliary requests 1 to 12 do not meet the requirements of Article 123(2) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



A. Vottner

A. Uselli

Decision electronically authenticated