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**Datasheet for the decision
of 12 December 2023**

Case Number: T 0935/21 - 3.2.08

Application Number: 07007950.4

Publication Number: 1982671

IPC: A61C8/00

Language of the proceedings: EN

Title of invention:

Dental implant having a surface made of a ceramic material

Patent Proprietor:

Straumann Holding AG

Opponent:

Vita Zahnfabrik H. Rauter GmbH & Co. KG

Relevant legal provisions:

EPC Art. 56, 83, 84, 123(3)

RPBA 2020 Art. 15(3), 12(4), 12(6)

Keyword:

Inventive step - (yes)

Sufficiency of disclosure - (yes)

Claims - lack of clarity no ground for opposition

Amendments - broadening of claim (no)

Oral proceedings - held in absence of party

Late-filed request - should have been submitted in first-
instance proceedings (no) - admitted (yes)

Decisions cited:

G 0003/14



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Case Number: T 0935/21 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 12 December 2023

Appellant:
(Patent Proprietor)

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(Opponent)

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 20 April 2021
revoking European patent No. 1982671 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairwoman: P. Acton
Members: C. Vetter
F. Bostedt

Summary of Facts and Submissions

I. The appeal was filed by the patent proprietor (appellant) against the decision of the opposition division to revoke the patent in suit.

II. The opposition division had decided that the subject-matter of the claims as granted was not novel and that the subject-matter of claim 1 of auxiliary requests 1 and 2 was not based on an inventive step. It had further decided not to admit auxiliary request 3 into the proceedings.

III. Oral proceedings were held before the Board.

Despite being duly summoned, the respondent (opponent) was not present at the oral proceedings before the Board, as announced with letter dated 20 November 2023. The opponent was therefore treated as if it were relying only on its written submissions (Rule 115(2) EPC, Article 15(3) RPBA 2020).

IV. The appellant (proprietor) requested that the decision under appeal be set aside and that a patent be maintained on the basis of auxiliary request 4 filed on 27 August 2021 together with the statement setting out the grounds of appeal.

The respondent (opponent) had requested in writing that the appeal be dismissed. It had also requested that the affidavit by Mr A. Armutlulu as well as auxiliary requests 3 and 4 not be admitted into the proceedings.

V. Claim 1 of auxiliary request 4 reads as follows (feature designation added by the Board):

- 1) Dental implant having a surface made of a ceramic material based on zirconia, characterized in that
- 2) the ceramic material has an average grain size from 0.1 μm to 0.6 μm and
- 3) the surface has a topography defined by
 - 3.1) a Core Roughness Depth S_k of less than 1 μm , the Core Roughness Depth S_k being between 0.4 μm and 1 μm , and
 - 3.2) a Skewness S_{Sk} of less than 0.

VI. In the present decision, reference is made to the following documents:

- D5: US 6,270,347
- D6: WO 2006/003501 A1
- D8: US 2005/0106534 A1
- D13: Smith S.L. et al, Journal of Materials Science 34 (1999) 5159-5162
- D15: DIN EN ISO 4287
- D16: Wennerberg A., Ph D.-Thesis "On Surface Roughness and Implant Incorporation"
- D17: Wysocka K. et al, AFM examination of sol-gel matrices doped with photosensitizers, Optica Applicata Vol XXXVIII, No. 1.2008

VII. The arguments of the parties relevant to the decision are set out below in the Reasons for the Decision.

Reasons for the Decision

1. Auxiliary request 4 - admittance into the proceedings
- 1.1 Auxiliary request 4 was filed together with the statement setting out the grounds of appeal dated 27 August 2021.
- 1.2 The opponent had requested in writing that this request not be admitted into the proceedings on the grounds that it was late filed and not *prima facie* allowable. According to the opponent, the request should have been filed in the proceedings before the opposition division. Moreover, the request was unclear and did not involve an inventive step over D8 in combination with D6 or D5.
- 1.3 During oral proceedings before the opposition division, the proprietor had filed an auxiliary request 3 which differed from the present auxiliary request 4 in feature **3.1**, which then read as follows.

3.1') a Core Roughness Depth S_k of between 0.4 μm and 1 μm

The opposition division had decided not to admit this auxiliary request 3 into the proceedings on the grounds that it was not considered *prima facie* allowable. In the opposition division's opinion, auxiliary request 3 extended the scope of protection within the meaning of Article 123(3) EPC because it included a Core Roughness Depth S_k of 1 μm , whereas in claim 1 as granted the Core Roughness Depth S_k was defined as *less than* 1 μm . Moreover, according to the opposition division, the claimed subject-matter was not based on an inventive

step under Article 56 EPC, since feature **3.1'** was not considered to be a distinguishing feature over the disclosure of D8 (decision under appeal, point 59).

1.4 The proprietor was aware that the objection under Article 123(3) EPC could be overcome by reintroducing the expression "less than 1 μm " into the claim (minutes, point 42). However, it was also aware that reintroducing this expression was very unlikely to affect the opposition division's conclusion on inventive step. Therefore, there can be no doubt that the proprietor *could* have filed such a request during opposition proceedings. However, there was no reason for it to do so in the sense that the proprietor *should* have submitted the request within the meaning of Article 12(6), second sentence, RPBA 2020.

1.5 Auxiliary request 4 was filed at the earliest stage of the appeal proceedings and in response to the reasons given in the opposition division's decision. Claim 1 of this request combines the features of granted claims 1 to 4 *verbatim*. Consequently, it is not to be examined for clarity and conciseness under Article 84, second sentence, EPC (G 3/14).

It reintroduces the expression "less than 1 μm " into Feature **3.1**, so that the request *prima facie* overcomes the objection under Article 123(3) EPC.

As the Board considers that document D8 does not disclose a specific Core Roughness Depth S_k value (see point 2.3 below), it is not *prima facie* apparent that feature **3.1** is not in principle suitable for establishing an inventive step.

The Board therefore exercises its discretion under Article 12(4) RPBA 2020 and admits the request into the appeal proceedings.

2. Auxiliary request 4 - inventive step

2.1 Document D8 discloses a (references in parentheses refer to D8)

1) dental implant having a surface made of a ceramic material based on zirconia (abstract; paragraph [0018]; claim 1).

2.2 It was undisputed that D8 does not disclose that

2) the ceramic material has an average grain size from 0.1 μm to 0.6 μm .

2.3 D8 does also not disclose a specific Core Roughness Depth S_k value in the sense of feature **3.1**. What is disclosed in D8 is that the surface has a topography defined by a maximum surface roughness R_{max} of 1 μm (D8, paragraph [0029]; claim 4). It was undisputed that this implies that the Core Roughness Depth S_k must be less than 1 μm . However, this does not lead to the conclusion that the Core Roughness Depth S_k necessarily falls within the claimed range. Indeed, the Core Roughness Depth S_k of the dental implant of D8 could just as well be below 0.4 μm . Therefore, D8 does not directly and unambiguously disclose that the surface has a topography defined by

3.1) a Core Roughness Depth S_k of less than 1 μm , the Core Roughness Depth S_k being between 0.4 μm and 1 μm .

2.4 It was undisputed that D8 does not explicitly disclose that the surface has a topography defined by

3.2) a Skewness S_{Sk} of less than 0.

In the written procedure, the opponent had argued that D8 implicitly disclosed feature **3.2**. According to the opponent, a Skewness S_{Sk} of less than 0 was the inevitable result of following the manufacturing steps of D8. However, the opponent provided no (experimental) evidence of this.

2.5 The only example disclosed in D8 (paragraph [0080]) differs from the examples in the patent in suit in the etching solution used. While D8 etches with phosphoric acid, the examples in the patent in suit use an etching solution containing hydrofluoric acid. Moreover, D8 does not specify the grain size of the ceramic material. According to the patent in suit (paragraph [0044]), the etching removes discrete grains or agglomerates of grains from the ceramic material. The proprietor argued that the size of the removed and remaining grains or agglomerates of grains thereby determines the surface topography. This was not disputed by the opponent.

Therefore, the Board is not convinced that the manufacturing steps disclosed in D8 inevitably result in a surface that has a topography defined by a Skewness S_{Sk} of less than 0.

2.6 Based on the above-identified distinguishing features **2** and **3**, **3.1** and **3.2**, the objective technical problem can be formulated as providing a dental implant with a ceramic material that exhibits high osseointegration.

2.7 Starting from the ceramic dental implant disclosed in D8, the skilled person will not find in D8 itself, or in D6 or D5, any hint or suggestion for designing the surface topography of the dental implant in accordance with features **3.1** and **3.2**. In fact, all these prior-art documents are silent on the topography parameters of Core Roughness Depth S_k and Skewness S_{sk} .

With respect to the ceramic dental implants of the prior art listed in the patent in suit (paragraph [0091]), they all have a surface topography defined by a Core Roughness Depth S_k of more than $1\ \mu\text{m}$ and a skewness S_{sk} of less than 0 (figure 13). Consequently, these prior-art implants do not teach or suggest the claimed surface topography, either, which requires that

- 3)** the surface has a topography defined by
 - 3.1)** a Core Roughness Depth S_k of less than $1\ \mu\text{m}$, the Core Roughness Depth S_k being between $0.4\ \mu\text{m}$ and $1\ \mu\text{m}$, and
 - 3.2)** a Skewness S_{sk} of less than 0.

2.8 The claimed subject-matter is not therefore rendered obvious by the prior art cited by the opponent. It is thus based on an inventive step within the meaning of Article 56 EPC.

3. Auxiliary request 4 - sufficiency of disclosure

3.1 The opponent had argued in writing that the definition of the Skewness S_{sk} in paragraph [0035] of the patent in suit contained a contradiction.

This was undisputed by the proprietor.

However, the Skewness S_{sk} is a well-known parameter for describing a characteristic of a surface topography, as shown by D16, which is a standard manual "ON SURFACE ROUGHNESS AND IMPLANT INCORPORATION". The skilled person would therefore immediately recognise the incorrectness of the formula given in paragraph [0035] of the patent in suit, and would replace it with the correct formula, given for example in D16.

- 3.2 The opponent had further argued in writing that documents D13 and D15 to D17 provided different definitions of the Skewness S_{sk} , so that it was not clear to the skilled person which definition of the Skewness S_{sk} was the correct one.

However, the opponent has not shown that the different ways of writing the formulae in documents D13 and D15 to D17 actually result in different definitions and thus different results for the Skewness S_{sk} .

- 3.3 Finally, the opponent had argued in writing that the skilled person would not be able to implement the invention according to claim 1 across the entire claimed range, because the patent in suit did not contain any instructions on how to achieve a Core Roughness Depth S_k in the range between 0 μm and 0.38 μm .

However, this range is no longer encompassed by claim 1 of auxiliary request 4.

- 3.4 The patent in suit therefore discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art within the meaning of Article 83 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent as amended in the following version:

Claims:

No. 1 to 4 according to auxiliary request 4 filed with the letter of 27 August 2021

Description:

Pages 2 to 9 received during oral proceedings of 12 December 2023

Drawings:

Figures 1 to 15 of the patent specification

The Registrar:

The Chairwoman:



C. Moser

P. Acton

Decision electronically authenticated