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**Datasheet for the decision
of 6 May 2026**

Case Number: T 1451/24 - 3.3.05

Application Number: 12820547.3

Publication Number: 2738147

IPC: C04B35/48, A61C7/14, A61C13/083

Language of the proceedings: EN

Title of invention:
COLORED AND LIGHT-TRANSMITTING SINTERED ZIRCONIA COMPACT AND
USE OF SAME

Patent Proprietor:
Tosoh Corporation

Opponent:
Dental Direkt GmbH

Headword:
Zirconia compact/TOSOH

Relevant legal provisions:
EPC Art. 56
RPBA 2020 Art. 13(2)

Keyword:

Inventive step - main request (yes)

Amendment after summons - taken into account (no)

Decisions cited:

T 0152/24, T 1800/21, T 1692/21, T 2843/19, T 2295/19,
T 2920/18, T 1117/16

Catchword:



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 1451/24 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 6 May 2026

Appellant: Dental Direkt GmbH
(Opponent) Industriezentrum 106-108
32139 Spenge (DE)

Representative: VKK Patentanwälte PartG mbB
An der Alster 84
20099 Hamburg (DE)

Respondent: Tosoh Corporation
(Patent Proprietor) 4560 Kaisei-cho
Shunan-shi
Yamaguchi 746-8501 (JP)

Representative: TBK
Bavariaring 4-6
80336 München (DE)

Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted/electronically transmitted on 11 November 2024 rejecting the opposition filed against European patent No. 2738147 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chair R. Winkelhofer
Members: T. Burkhardt
S. Besselmann

Summary of Facts and Submissions

I. The appeal by the opponent (appellant) is against the opposition division's decision to reject two oppositions against European patent No. 2 738 147 B, concerning a sintered zirconia compact and its use.

Former opponents 1 and 2 merged during the opposition proceedings into the only remaining opponent, the appellant.

II. Of the documents discussed at the opposition stage, the following are relevant to the present decision:

D1 JP 2008050246 A
D1a English translation of D1
D2 EP 2 045 222 A1
D3 EP 2 263 988 A1

III. With their grounds of appeal, the appellant further submitted the following documents:

D4 JP 2004 059 374 A
D4a English translation of D4
D5 CA 2 777 485 A1
D6 WO 2010/110650 A1

IV. Independent product claim 1 of the main request (granted version of the patent) reads as follows:

"1. A colored translucent zirconia sintered body, containing an iron compound and from 2 to 4 mol% of

yttria, and showing a lightness L^* of from 51 to 80 in $L^*a^*b^*$ color system, characterized by containing from 0.01 to 0.15 wt% of alumina, having a content of the iron compound of less than 2,000 ppm as calculated as Fe_2O_3 , having a relative density of at least 99.80%, and having a total light transmittance of at least 20% as measured at a sample thickness of 1 mm and with a D65 light source."

Dependent product claims 2 to 8 relate to embodiments of the sintered body.

Independent claim 9 is directed to the use of the sintered body.

Dependent claims 10 and 11 relate to uses.

- V. In their statement of grounds of appeal, the appellant contested the opposition division's conclusion that the claimed subject-matter involved an inventive step.

After the board issued its communication under Article 15(1) RPBA on 23 December 2025, the appellant further raised objections under Article 83 EPC in a submission dated 29 January 2026 and submitted additional evidence in support.

- VI. The arguments put forward by the appellant during the appeal proceedings can be summarised as follows.

The invention did not meet the requirements of Article 83 EPC. The objections had come up during related infringement proceedings in the USA and were to be considered in the appeal proceedings.

The subject-matter of claim 1 lacked inventive step in view of:

- Comparative Example 1 of **D1** in combination with each of D2 and D3
- **D3** in combination with Comparative Example 1 of D1, possibly further in combination with Inventive Example 1 of D1
- **D3** in combination with D4, D5 and D6

VII. The respondent's arguments at the appeal stage are reflected in the reasons below.

VIII. The appellant requests that the decision be set aside and amended such that the patent be revoked.

The patent proprietor (respondent) requests that the appeal be dismissed. Alternatively, they request that the patent be maintained in amended form on the basis of one of auxiliary requests 1 to 5 (filed with their reply to the appeal).

Reasons for the Decision

1. Admission/consideration of objections under Article 83 EPC

In their submission of 29 January 2026, the appellant raised several objections under Article 83 EPC against claim 1 of the main request and submitted several documents as evidence.

The appellant justified the timing of the submission by asserting that these objections had only recently emerged, namely during a "claim construction meeting" concluded on 12 November 2025 which had taken place in US infringement proceedings in a copending case, belonging to the same patent family. Due to secrecy arrangements specific to US proceedings, the representatives in the current appeal proceedings had only been informed subsequently of its elements. Therefore, the objections could not have been raised earlier. Moreover, the objections were *prima facie* highly relevant. Hence, the questions of the substance of the objections and of their admission were closely linked.

However, for the reasons set out below, the objections under Article 83 EPC and the supporting evidence are disregarded (Article 13(2) RPBA).

In the appeal proceedings, no objections under Article 83 EPC had been raised previously, although the ground for opposition pursuant to Article 100(b) EPC had been dealt with in the impugned decision. The objections and the supporting evidence are thus an amendment to the appellant's case.

Since the objections were raised and evidence was submitted more than one month after the notification of the communication under Article 15(1) RPBA, the provisions of Article 13(2) RPBA apply, imposing the most stringent limitations on a party wishing to amend their appeal case, i.e. there must be exceptional circumstances justified by cogent reasons.

The appellant did not raise the objections until more than two months after the end of the "claim

construction meeting" in the USA. There is no evidence on file that the content or records of the meeting were not publicly available directly after the meeting. There is also no evidence of any secrecy arrangements and secrecy obligations on the part of the appellant. Thus, it has not been shown that the submission was made at the earliest possible time.

Under these circumstances, waiting for the board's communication under Article 15(1) RPBA to come forward with further objections is not in line with the parties' procedural obligations to conduct appeal proceedings diligently and expeditiously, which ensures fairness to the other parties, and to bring the proceedings to an end within reasonable time (T 2843/19, Reasons 3.3; T 1692/21, Reasons 53; Case Law of the Boards of Appeal of the EPO, 11th edn., 2025, V.A.4.1.2; V.A.4.5.5 a)).

Moreover, *prima facie* relevance is not sufficient at this stage of the proceedings to account for exceptional circumstances that might justify admission and consideration (*ibid.*, V.A.4.5.5 m)), contrary to the appellant's view. Under these circumstances, the question of *prima facie* relevance can hence be left open.

Considering the submission of the Article 83 EPC objection, which is based on an expert analysis and calculation results, would also be detrimental to procedural economy since the respondent would in turn have to be granted sufficient time to study the submission and to respond (e.g. by looking for counter-evidence, carrying out experiments, consulting an expert, etc.) to ensure fair proceedings.

The RPBA are based on the need to balance procedural economy against fairness of the proceedings in each case (T 152/24, Reasons 1.4, T 1800/21, Reasons 3.4.2 ff, T 2295/19, Reasons 3.4.6, T 2920/18, Reasons 3.14; T 1117/16, Reasons 6). In light of these principles, it is also not decisive - as outlined above - whether the objections might be relevant on a *prima facie* basis or whether the elements underlying the objection could have been known earlier to the European patent attorneys representing the appellant. Under the circumstances of the case at hand, the *prima facie* relevance taken together with the late date of discovery could not outweigh the principal considerations of procedural economy and fairness towards the respondent.

For these reasons, the content of the appellant's submission of 29 January 2026 has to be disregarded (Article 13(2) RPBA).

2. Admission and consideration of documents D4/D4a, D5 and D6

There is no apparent reason for submitting these documents only at the appeal stage. Such a reason has also not been brought forward by the appellant.

Hence, these documents have to be disregarded (Article 12(6) RPBA).

Main request

3. Article 100(a) in combination with Article 56 EPC

The invention relates to a zirconia sintered body.

The appellant argued that the subject-matter of claim 1 lacked inventive step in view of:

- Comparative Example 1 of D1 in combination with each of D2 and D3
- D3 in combination with Comparative Example 1 of D1, possibly further in combination with Inventive Example 1 of D1
- D3 in combination with each of D4, D5 and D6

However, for the reasons set out below, the main request meets the requirements of Article 56 EPC.

3.1 Comparative Example 1 of **D1** as the starting point

Comparative Example 1 of D1 (see paragraph [0055] of D1a) also relates to a zirconia sintered body and is therefore a suitable starting point for assessing inventive step.

According to the patent in suit (see paragraphs [0010] and [0011]), the problem to be solved is to provide a zirconia sintered body having high strength and aesthetic properties equivalent to those of natural teeth.

It is suggested to solve this problem by means of the zirconia sintered body of claim 1, which is characterised by the following features:

- (i) a relative density of at least 99.80%

(ii) a total light transmittance of at least 20% (as measured at a sample thickness of 1 mm and with a D65 light source)

(iii) an alumina content from 0.01% to 0.15% (according to paragraph [0055] of D1a, Comparative Example 1 has an alumina content of 0.25 %)

These distinguishing features have not been disputed.

It has not been disputed either, at least not for D1 as the closest prior art, that these distinguishing features improve at least the translucency of the sintered body to obtain the aesthetic appearance of natural teeth.

For instance, Table 1 of the patent shows that an alumina content above the claimed range (such as that of Comparative Example 1 of D1) results in relatively low light transmittance.

Comparative Example 1 of D1 moreover results in a reddish colour (paragraphs [0055] and [0056] of D1a), which is incompatible with dental applications. The appellant's view that this colour variation was unrelated to the technical problem posed and should be ignored is not convincing. Even the appellant themselves (see the second paragraph on page 4 of the grounds of appeal) indicates a technical problem that mentions the appearance of natural teeth. A reddish colour is incompatible with this objective.

The skilled person, when starting from Comparative Example 1 of D1, would therefore first try to avoid the reddish colour. D1 itself suggests in paragraphs [0011], [0013], [0022] and [0023] (see D1a) using an Fe-Y composite (instead of Fe_2O_3 used in Comparative

Example 1) to obtain an appearance close to natural teeth. Yet, it has not been disputed that none of the examples of D1 using an Fe-Y falls within the scope of claim 1.

Even if, *arguendo*, the skilled person starting from Comparative Example 1 of D1 took the teaching of D2 or D3 into consideration (instead of looking for a solution in D1), they would not arrive at the subject-matter of claim 1 for the following reasons.

- **D2** suggests in paragraphs [0054] to [0056] a sintering aid such as alumina or alumina composite oxides to achieve good transparency. However, D2 firstly discloses only an overlapping content of this sintering aid of between 0.1 and 0.3 wt% (paragraph [0055]). Moreover, the alumina content of Comparative Example 1 of D1, namely, 0.25 wt.%, already falls within this range. There is thus no incentive to change the alumina content. Secondly, in D2 an alumina composite oxide (such as spinel) is preferred over alumina (paragraph [0056]). Finally, the method of measuring light transmittance disclosed in D2 (paragraphs [0068] to [0070]) is different from that of claim 1 so that a comparison with the light transmittance mentioned in paragraph [0070] of D2 is not necessarily meaningful.

- The appellant also points to **D3** but indicates no passage that would prompt the skilled person, starting from Comparative Example 1 of D1, to adjust features (i), (ii) and (iii) to solve the technical problem posed. Moreover, the skilled person would not apply the teaching of D3 to D1. While in D1 (see paragraphs [0011], [0013] and [0023] of D1a) the iron component is key to obtaining the desired colour, D3 seeks to

achieve the desired properties for dental applications without the use of any iron compound.

Hence, the skilled person would not arrive at the subject-matter of claim 1 when starting from Comparative Example 1 of D1.

3.2 **D3** as the starting point

D3 is also directed to a zirconia sintered body having high strength and aesthetic properties equivalent to those of natural teeth (paragraph [0002]). Consequently, D3 is also a suitable starting point for assessing inventive step, as correctly found by the opposition division (see point II.4.14 of the decision).

It has not been disputed that D3 does not disclose the presence of an iron compound, let alone an iron compound with the claimed content.

3.2.1 In their grounds of appeal, the appellant repeated (and did not dispute) the formulation of the technical problem to be solved when starting from D3 according to the patent, namely to provide a body with a light yellow colour similar to that of natural teeth (in line with paragraph [0019] of the patent).

It is suggested to solve this problem by means of the zirconia sintered body of claim 1, which is characterised by a content of an iron compound of less than 2000 ppm (calculated as Fe_2O_3).

The skilled person would not apply the iron content of Comparative Example 1 of **D1** to the teaching of D3 since this results in a reddish colour as described in

paragraph [0056] of D1a. Hence, it cannot be seen how the skilled person would have derived a solution to the indicated technical problem from Comparative Example 1 of D1, which itself does not solve that problem.

- 3.2.2 The appellant also argued for the first time at the oral proceedings before the board that the skilled person would not be dissuaded from proceeding further in view of the reddish colour obtained when starting from D3 and applying the teaching of Comparative Example 1 of D1. In paragraph [0056], Comparative Example 1 of D1 indicated a "color tone [...] equivalent to that of Example 1". The skilled person, faced with reddish colour contamination, would therefore additionally turn to Inventive Example 1 of D1. They would have recognised that the two-step procedure used in Inventive Example 1 and described in paragraph [0019] (i.e. Fe_2O_3 is first reacted with Y_2O_3 , and only the reaction product is used as a colouring agent) resulted in "a transparent yellow color". Therefore, the skilled person would have continued by replacing the direct procedure of Comparative Example 1 of D1 (Fe_2O_3 is directly used as colouring agent, not pre-reacted) with the two-step procedure of Inventive Example 1.

However, as also acknowledged by the appellant, the difference between the direct procedure and the two-step procedure in D1 had not been addressed previously in the proceedings. Inventive Example 1 had not been referred to in the inventive-step objection starting from D3 either. Consequently, this line of argument does not merely corroborate the existing one. In the absence of any exceptional circumstances justifying its consideration, this line of argument is disregarded (Article 13(2) RPBA).

3.2.3 In a further line of argument, the appellant reformulated the technical problem to be solved when starting from D3 as to provide a transparent zirconia sintered body with a slightly yellowish colour. It was not necessary to mention dental applications in the formulation of the problem since claim 1 of the patent was not restricted in this way. For other applications, colour uniformity was not a requirement, and reddish contamination could be tolerated. Electronic parts, for example, were also addressed in both D1 and D3. In view of this reformulated problem, the skilled person would not be dissuaded by the reddish colour from applying the teaching of Comparative Example 1 of D1 to D3, and thus arrive in an obvious manner at the subject-matter of claim 1.

This is not convincing either. As the respondent correctly pointed out, the skilled person would not apply the teaching of Comparative Example 1 of D1 to obtain a slightly yellowish colour since Comparative Example 1 of D1 explicitly yields a reddish colour.

Moreover, while both D1 and D3 mention alternative applications other than dental materials, the respective applications are not the same. Machine structures such as cutting tools (mentioned in D3, paragraph [0002]) cannot be equated to electronic parts (mentioned in D1, paragraph [0003]), in contrast to the appellant's view. The only application mentioned in both documents is for dental materials, for which a uniform transparent yellow colour would be desirable, but not the reddish colour of Comparative Example 1, as outlined above.

Furthermore, there is no indication that a non-uniform colour with reddish contamination would have been desirable for any of the applications in D3.

- 3.2.4 Regarding the combinations of D3 with each of **D4**, **D5** and **D6**, these documents have to be disregarded, as explained above (see point 2.).

For these reasons, the subject-matter of product claim 1 involves an inventive step. This equally applies to:

- dependent product claims 2 to 8
- independent use claim 9, which refers back to claim 1
- dependent use claims 10 and 11

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



C. Vodz

R. Winkelhofer

Decision electronically authenticated