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**Datasheet for the decision  
of 27 January 2025**

**Case Number:** T 0962/23 - 3.3.05

**Application Number:** 16775015.7

**Publication Number:** 3347319

**IPC:** C03C12/02, C09D123/08,  
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**Language of the proceedings:** EN

**Title of invention:**  
DURABLE RETROREFLECTIVE ELEMENTS WITH A BLEND OF BEADS

**Patent Proprietor:**  
3M Innovative Properties Company

**Opponent:**  
Swarco AG

**Headword:**  
RETROREFLECTIVE ELEMENTS WITH BEADS/3M

**Relevant legal provisions:**  
EPC Art. 56  
RPBA 2020 Art. 12(3), 12(5), 13(2)

**Keyword:**

Inventive step - obvious alternative - technical effect derivable from application as originally filed (no)  
Reply to statement of grounds of appeal - insufficient substantiation of request  
Discretion not to admit submission - requirements of Art. 12(3) RPBA 2020 met (no)  
Amendment after summons - exceptional circumstances (no)  
Amendment - prohibition of reformatio in peius

**Decisions cited:**

G 0001/99, T 1128/21, T 0364/20, T 1447/18, T 0270/90

**Catchword:**



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Case Number: T 0962/23 - 3.3.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.05**  
**of 27 January 2025**

**Appellant:**

(Opponent)

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(Patent Proprietor)

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**Decision under appeal:**

**Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
15 March 2023 concerning maintenance of the  
European Patent No. 3347319 in amended form.**

**Composition of the Board:**

**Chairman**

E. Bendl

**Members:**

J. Roider

O. Loizou

## Summary of Facts and Submissions

I. The opponent's appeal lies from the interlocutory decision of the opposition division to maintain European patent No. EP 3 347 319 B1 in amended form on the basis of auxiliary request 1 as filed during the oral proceedings before the opposition division, which is the present main request.

II. The following document, which was cited in the opposition proceedings, is relevant here:

D1                    US 4,983,458 A

III. The claim requests can be summarised as follows:

(a) Claim 1 of the main request in the appeal proceedings reads as follows (with amendments with respect to the patent as granted underlined):

*"1. A reflective element comprising:  
a composite core comprising a polymer and a plurality of first beads having a first refractive index distributed throughout the polymer and throughout the composite core, wherein the first refractive index ranges from 1.5 to 2.6;  
a plurality of second beads having a second refractive index that is different than the first refractive index, wherein the second beads are at a perimeter of the composite core, and wherein the first beads or the second beads are glass ceramic beads."*

The amendments in relation to the main request that

have been made in each of the further requests, where relevant to the decision, are set out below:

- (b) The feature "*and throughout the composite core*" of the main request is not contained in claim 1 of any of auxiliary requests 2 to 6, 1-2, 1-3, 1-4 and 1-5.
- (c) The feature "*, and wherein the first beads have a different composition than the second beads*" has been added to the end of claim 1 of auxiliary request 2a.
- (d) The feature "*wherein the first beads or the second beads are glass ceramic beads*" of the main request is not contained in claim 1 of any of auxiliary requests 3a, 4a, 5a and 6a.
- (e) The term "*comprising*" has been replaced by "*consisting of*" in claim 1 of auxiliary request 1-2a.
- (f) The first occurrence of the word "*and*" has been replaced by "*loaded with*" in claim 1 of auxiliary request 1-3a.
- (g) The feature "*A reflective element*" has been replaced by "*A spherical reflective element*" in claim 1 of auxiliary request 1-4a.
- (h) The feature "*wherein the difference in refractive index between the first refractive index and the second refractive index is at least 0.25*" has been added at the end of claim 1 of auxiliary request 1-5a.

IV. The key arguments of the opponent (appellant) can be summarised as follows:

Main request - inventive step, Article 56 EPC

The patent in suit presented glass and glass ceramic as equivalent alternatives. A superior wear resistance of glass ceramics was not apparent from the patent in suit. The reference to patent documents cited in the application as originally filed was a new line of argument.

Auxiliary request 2a - remittal

The board was competent to decide on the case. A remittal was not justified given the complexity of the amendment.

Auxiliary request 2a - inventive step, Article 56 EPC

It was not possible to provide refractive indices of 1.5 and 1.9 (D1: column 5, lines 40 to 44; column 6, lines 1 to 5) from beads having the same composition.

Auxiliary requests 1-2a to 1-5a - admission,  
Article 12(3) RPBA

The patent proprietor did not explain the amendments made in any of these auxiliary requests. Moreover, a basis for the amendment in auxiliary request 1-4a ("*spherical*") was not apparent.

Auxiliary requests 2 to 6, 3a to 6a and 1-2 to 1-5 -  
prohibition of *reformatio in peius*

The deletion of the features "*and throughout the composite core*" and "*wherein the first beads or the second beads are glass ceramic beads*" violated the principle of prohibition of *reformatio in peius*. The limitation of these features is not implicitly

contained in the remaining features.

- V. The key arguments of the patent proprietor (respondent) can be summarised as follows:

Main request - inventive step, Article 56 EPC

Glass ceramic provided superior wear resistance, as was apparent from the description and particularly from the examples.

Auxiliary request 2a - remittal

The right to two instances was an established principle in the EPO.

Auxiliary request 2a - inventive step, Article 56 EPC

A different refractive index could also be provided by a differing geometry or a differing conformational composition but not necessarily by a differing composition of the particles.

Auxiliary requests 1-2a to 1-5a - admission, Article 12(3) RPBA

The purpose of the amendment was to further distinguish the subject-matter of claim 1 from D1, which was considered by the board to be obvious. The basis in paragraph [0038] and [0039] of the patent in suit was also seen to be obvious. Furthermore, auxiliary request 4 without the feature "and throughout the composite core" had already been filed in the opposition proceedings.

Auxiliary requests 2 to 6, 3a to 6a and 1-2 to 1-5 - prohibition of *reformatio in peius*

The deletion of the feature "*and throughout the composite core*" did not change the scope of claim 1 because it was implicitly contained in the remaining

features. As to the feature *"wherein the first beads or the second beads are glass ceramic beads"*, similar circumstances to those underlying G 1/99 applied and therefore the deletion of this feature should be allowed.

VI. The parties' substantive requests are as follows:

The appellant (opponent) requested that the decision under appeal be set aside and the patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed, i.e., that the patent be maintained on the basis of auxiliary request 1 filed during the oral proceedings before the opposition division (main request), or, in the alternative, that the patent be maintained on the basis of one of the auxiliary requests 2, 3, 5, 6, filed on 21 December 2021 or one of auxiliary requests 4, 1-2 to 1-5, filed on 15 December 2022, or, on the basis of one of the auxiliary requests 2a to 6a, 1-2a to 1-5a, filed with the reply to the appeal.

The patent proprietor also requested the remittal of the case to the department of first instance for further prosecution of the auxiliary requests in case the main request was not found to be allowable.

## **Reasons for the Decision**

1. Main request

1.1 Inventive step, Article 56 EPC

The patent in suit relates to reflective elements with



at least two types of beads.

D1 also relates to reflective elements with at least two types of beads and is considered by both parties to be the most suitable starting point for assessing the presence of an inventive step.

- 1.1.1 According to the respondent, the problem the patent aims to solve is to provide a reflective element that is durable with improved performance in dry and wet conditions (see the reply to the grounds of appeal, last paragraph on page 7).
- 1.1.2 It is proposed that the problem be solved by the features of claim 1, which differs from D1 in that the first beads or the second beads are glass ceramic beads.
- 1.1.3 It is noted that, as argued by the appellant, the technical problem must be assessed in the light of the differences between the subject-matter of claim 1 and D1 (see the appellant's letter of 15 January 2024, page 4, second paragraph).

However, the patent in suit does not state any effect or advantage in relation to the use of glass ceramic beads. On the contrary, paragraph [0034] states that glass and glass ceramic beads are equivalent and paragraph [0006] merely states that the first and second beads may be glass or glass ceramic beads.

A link between the material glass ceramic and the alleged improvement in performance in wet conditions cannot be inferred from the patent in suit and such a link is not convincing.

The respondent argued that in view of paragraph [0014] of the patent in suit, the second beads had to be glass ceramic beads.

Paragraphs [0013] to [0015] of the patent in suit disclose the refractive index required for a good performance in dry and wet conditions. There is no mention of glass ceramic in the context of performance in dry or wet conditions, however. Paragraph [0014] discloses that at night and/or in wet conditions, the refractive index should be 1.85 to 2.45, thus disclosing a requirement for the refractive index and not for the material of the beads.

The patent proprietor contended that the examples of the patent in suit demonstrated exceptional wear resistance.

However, the examples cannot show that this is due to the use of glass ceramic beads.

Comparative Examples A and B are reflective elements made from a Core A, according to Example 1 of US 2005/0100709 A, coated with microcrystalline beads with a refractive index of 2.4 and 1.9, respectively (see the patent in suit, paragraphs [0057] and [0058]). Their wear resistance has been compared with Composite Cores 1 to 3 according to the patent in suit, which have glass beads incorporated into the core and are also covered with microcrystalline beads (see the patent in suit, paragraphs [0055] and [0059]). The examples demonstrate superior performance compared to the comparative examples. The examples and the comparative examples use microcrystalline beads. The comparison does not show that the improvement is due to the utilisation of glass ceramic beads.

The respondent argued that the burden of proof of the absence of the purported effect was on the opponent.

The disputed feature, i.e. that the first or second beads are glass ceramic beads, was added to the main request during the opposition proceedings. The respondent asserted that this feature was associated with a particular effect.

In accordance with established case law, the onus is on each party to substantiate the facts on which they rely (Case Law of the Boards of Appeal, 10th ed., 2022, III.G.1; T 270/90, point 2.1). Consequently, the responsibility to demonstrate that the purported effect was attributable to the contested feature rests with the respondent (T 1447/18, point 5.4).

The respondent argued in its letter of 2 October 2024, thus after notification of the communication under Article 15(1) EPC, that the effect was derivable from patent documents cited in the application as originally filed.

Notwithstanding the question of whether such a general reference to patent documents cited in the application as originally filed in support of the alleged effect is even admissible, this constitutes a new line of argument. No exceptional circumstances justifying the admission of these arguments are apparent, nor have any been invoked by the patent proprietor.

The purported effects allegedly shown in patent documents that are generally referred to in the application as originally filed are therefore not taken into account (Article 13(2) RPBA).

1.2 Thus, the differing features do not solve the technical problem as stated by the respondent, which must therefore be reformulated as a less ambitious technical problem, i.e. to provide an alternative reflective element.

The parties agree that glass ceramic beads are well-known products used for reflective elements (see the minutes from the oral proceedings before the opposition division, page 4, second and third paragraphs; the statement of grounds of appeal, paragraph 4.1; the reply to the appeal, paragraph 4.2; and the patent in suit, paragraphs [0002] and [0003]).

The respondent argued that D1 did not provide a pointer to the use of glass ceramic beads, which corresponds to the view of the opposition division in paragraph 6.22 of the impugned decision.

However, if the aim is to provide an alternative reflective element, the skilled person does not need a pointer. Rather, they would consider any reasonable alternative (T 364/20, point 11.6.2).

D1 does not discourage the skilled person from using glass ceramic beads. While the examples of D1 do not disclose beads with different refractive indices, they do not offset the teaching in column 5, lines 40 to 44, and column 6, lines 1 to 5, which discloses spheres with a refractive index of 1.5 in the interior of the reflective element and surface spheres with a refractive index of 1.9.

Starting from D1, the skilled person would consider a reflective element as claimed in claim 1 when tasked with providing an alternative.

The subject-matter of claim 1 therefore lacks an inventive step.

2. Auxiliary request 2a - remittal

The respondent requested the remittal of the case for further prosecution of auxiliary request 2a. It argued that auxiliary request 2a had not been dealt with by the opposition division. Therefore, the case had not been reviewed by two instances, which constituted special reasons within the meaning of Article 11 RPBA.

According to established case law, there is no absolute right to have an issue decided on at two instances (Case Law of the Boards of Appeal, 10th ed., 2022, V.A. 9.2.1). The mere fact that the opposition division did not decide on auxiliary request 2a does not as such constitute special reasons.

As in the case of the main request, the question of the presence of an inventive step starting from D1 is also decisive for auxiliary request 2a. The amendment made in auxiliary request 2a does not change the legal or factual framework, and therefore this matter can be dealt with by the board (Case Law of the Boards of Appeal, 10th ed., 2022, V.A.9.6.1).

Therefore, no special reasons for remitting the present case are apparent.

3. Auxiliary request 2a - inventive step, Article 56 EPC

The addition that the first and second beads be

different materials in auxiliary request 2a does not provide a solution to the problem as stated by the proprietor (see paragraph 1.1.1 above) for the same reasons as those discussed with respect to the main request.

Therefore, the technical problem to be solved is to provide an alternative reflective element.

Starting from D1, the skilled person tasked with providing an alternative would consider a reflective element with different materials for the first and second beads, as claimed in claim 1.

The subject-matter of claim 1 therefore lacks an inventive step.

4. Auxiliary requests 1-2a to 1-5a - admission

These requests were filed in reply to the opponent's statement of grounds of appeal. However, the respondent has not explained the proposed amendments in any way.

It should be noted that the requirement of substantiation under Article 12(3) RPBA 2020 also applies if the patent was maintained in amended form in the first-instance proceedings and the patent proprietor - as here - is only involved in the appeal proceedings as a respondent. The fact that the requests have already been admissibly filed at first instance does not release a party from its obligation to substantiate the requests on appeal (T 1128/21, point 2.3.2).

The admission of auxiliary requests 1-2a to 1-5a is at

the discretion of the board, pursuant to Article 12(3) and (5) RPBA 2020. This discretion must be exercised taking into account the specific circumstances of the case.

In the absence of any submissions, this includes the question of whether the amendments are self-explanatory.

In the present case, however, the amendments made by the respondent are not self-explanatory.

In the case of auxiliary requests 1-3a, 1-4a and 1-5a, the basis in the original application is not readily apparent; as argued by the appellant, a possible intermediate generalisation cannot *prima facie* be ruled out.

Furthermore, given that the dispute centres on whether D1 discloses or suggests glass ceramics, it is not apparent how any of the proposed amendments could overcome the deficiency under Article 56 EPC starting from D1. This applies in particular to auxiliary request 1-2a, which is based on the main request, with the text "*comprising*" having been replaced by "*consisting of*".

Therefore, the amendments are not self-explanatory.

5. Auxiliary requests 2 to 6, 3a to 6a and 1-2 to 1-5 - prohibition of *reformatio in peius*
- 5.1 The feature "*and throughout the composite core*" contained in auxiliary request 1 as maintained by the opposition division, i.e. the present main request, was

not contained in the subject-matter of claim 1 of any of auxiliary requests 2 to 6 and 1-2 to 1-5.

The appellant argued that the omission of this feature violated the principle of prohibition of *reformatio in peius*.

The respondent argued that this principle only applied to claim 1 of the patent as granted but not to an auxiliary request containing further restrictions. Moreover, the deleted features were implicitly contained in the remaining features.

However, the feature "*and throughout the composite core*" may be deleted only if the remaining features of claim 1 ensure that it is not broadened with respect to claim 1 as maintained. A further limitation relating to other features of the claim cannot compensate for the broadening implied by the omission.

The aforementioned requests do not contain any features implying the same limitation, nor do they further restrict the feature "*and throughout the composite core*" to a narrower definition. Therefore, the omission of the feature "*and throughout the composite core*" infringes the principle of the prohibition of *reformatio in peius* because it would put the sole appellant in a worse situation than if it had not appealed.

These requests are therefore not allowable (see G 1/99, Headword).

- 5.2 The feature "*wherein the first beads or the second beads are glass ceramic beads*", which was contained in claim 1 of auxiliary request 1 as maintained by the opposition division, i.e. the present main request, was



not contained in claim 1 of any of auxiliary requests 3a to 6a.

The requests in question do not contain any features implying the same scope, or further restricting the feature at issue to a narrower scope.

The exception of G 1/99 (see the Headword), which relates to an inadmissible amendment, is not applicable. Claim 1 did not inadmissibly contain the deleted feature. There is also no legal basis for extending to Article 56 EPC the particular situation of an inescapable trap created by the opposition division allowing an amendment which infringes the requirements of Article 123(2) EPC, as claimed by the respondent.

Therefore, the omission of the feature "*wherein the first beads or the second beads are glass ceramic beads*" infringes the principle of the prohibition of *reformatio in peius* because it would put the sole appellant in a worse situation than if it had not appealed.

These requests are therefore not allowable.

## 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:



C. Vodz

E. Bendl

Decision electronically authenticated