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**Datasheet for the decision  
of 4 November 2021**

**Case Number:** T 2474/17 - 3.3.05

**Application Number:** 09789083.4

**Publication Number:** 2323957

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C03C3/087, C03C3/091,  
C03C21/00, C03C3/062,  
C03C3/064, C03C3/093

**Language of the proceedings:** EN

**Title of invention:**

STRENGTHENED GLASS ARTICLES AND METHODS OF MAKING

**Patent Proprietor:**

Corning Incorporated

**Opponent:**

Nippon Electric Glass Co., Ltd.

**Headword:**

Glass articles/CORNING

**Relevant legal provisions:**

EPC Art. 54(1), 54(2), 87(1), 116(1)  
RPBA 2020 Art. 25, 13(1)  
RPBA Art. 12(4)

**Keyword:**

Oral proceedings - videoconference - COVID-19

Priority - (no)

Novelty - main request (no) - auxiliary request (no)

Amendment after summons - taken into account (no)

**Decisions cited:**

G 0001/21

**Catchword:**



**Beschwerdekammern**

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Case Number: T 2474/17 - 3.3.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.05**  
**of 4 November 2021**

**Appellant:** Corning Incorporated  
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**Representative:** Elkington and Fife LLP  
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**Respondent:** Nippon Electric Glass Co., Ltd.  
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**Representative:** Tetzner, Michael  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 7 September  
2017 revoking European patent No. 2323957  
pursuant to Article 101(3)(b) EPC.**

**Composition of the Board:**

**Chairman** E. Bendl  
**Members:** T. Burkhardt  
R. Winkelhofer

## Summary of Facts and Submissions

- I. The patent proprietor's (appellant's) appeal lies from the decision of the opposition division to revoke European patent 2 323 957 B.
- II. The following documents were among those submitted at the opposition stage:
- D1 WO 2008/143999 A1  
D4' translation of JP 2009 84075 A
- III. The opposition division held among other things that:
- the priority of the patent in suit was not valid,
  - the then main request met the requirements of Article 54 EPC, notably since the As<sub>2</sub>O<sub>3</sub> content of samples 1 to 3 of Table 3 of D1 did not fall under the expression "substantially free of arsenic" in claim 1,
  - the then main request contravened Article 56 EPC in view of D1.
- IV. With the statement of grounds of appeal, the appellant submitted, among other things, a main request, which is identical to the main request underlying the decision under appeal, and three new auxiliary requests.
- V. In the reply to the appeal, the opponent (respondent) raised, among other things, objections for lack of novelty and inventive step.

- VI. In a first communication under Article 15(1) RPBA 2020, the board informed the parties that the requests did not appear to fulfil the requirements of
- Articles 84, 123(2) and, in view of the apparently invalid priority of the patent in suit,
  - Article 54(1) and (2) EPC, let alone the requirements of Article 56 EPC.
- VII. In response, the appellant submitted further requests, namely main request A as well as auxiliary requests 1A, 2A, 3A and 4.
- VIII. In view of the COVID-19 pandemic, oral proceedings scheduled for 7 and 8 May 2020 were cancelled.
- IX. In a second communication, the board informed the parties that the new requests would probably not be considered and did not appear to overcome all the objections raised.
- X. Newly scheduled oral proceedings were also postponed because of the COVID-19 pandemic.
- XI. In a third communication, the parties were informed that the oral proceedings, which had been re-scheduled for 27 and 28 May 2021, would be held as a videoconference.
- XII. The appellant did not agree to the oral proceedings being held by videoconference and requested an in-person hearing. It was referred to the then pending referral G 1/21 before the Enlarged Board of Appeal, concerning the question of holding oral proceedings by videoconference even without the consent of all the parties, and it was further requested to stay the

proceedings until the decision in G 1/21 had been handed down.

XIII. In a fourth communication, the board confirmed that the oral proceedings would be held in the form of a videoconference and set out more detailed reasons in this regard.

XIV. Oral proceedings were held as a videoconference on 27 May 2021. No decision was announced there.

XV. On 28 October 2021, the written reasoning of the referral decision G 1/21 was published.

XVI. Independent claim 1 of the main request and of main request A reads as follows:

"1. A strengthened glass article comprising an alkali aluminosilicate glass substantially free of arsenic, the strengthened glass article having a thickness  $t$  from 0.2 mm to 0.5 mm and comprising:

a. an outer region, the outer region extending from a surface of the article to a depth of layer DOL within the article, wherein the outer region is under a compressive stress CS, wherein the DOL is at least 30  $\mu\text{m}$  and the CS is at least 600 MPa; and

b. an inner region, wherein the inner region is under a central tension CT, the CT being defined by the equation  $CT = (CS \cdot DOL) / (t - 2 \cdot DOL)$ , and wherein  $-15.7 t + 52.5 \leq CT \leq -38.7 \ln(t) + 48.2$ , wherein CT is expressed in megaPascals (MPa) and  $t$  is expressed in millimeters (mm), wherein the strengthened glass article is substantially free of frangible behavior when subjected

to a point impact sufficient to break the strengthened glass article."

XVII. As compared with the main request, independent claim 1 of auxiliary requests 1 and 1A contains the requirement that the alkali aluminosilicate glass is also "substantially free of ... antimony".

XVIII. As compared with the main request, independent claim 1 of auxiliary requests 2 and 2A contains the further requirement (at the end of the claim) that "the strengthened glass article is one of a cover plate for a portable electronic device, an information terminal device, and a display for a computer".

XIX. Independent claim 1 of auxiliary requests 3 and 3A combines the amendments of auxiliary requests 1/1A and 2/2A.

XX. As compared with auxiliary requests 3 and 3A, claim 1 of auxiliary request 4 contains the further requirement after "... sufficient to break the strengthened glass article" that "the alkali aluminosilicate glass comprises  $64 \text{ mol}\% \leq \text{SiO}_2 \leq 68 \text{ mol}\%$ ;  $12 \text{ mol}\% \leq \text{Na}_2\text{O} \leq 16 \text{ mol}\%$ ;  $8 \text{ mol}\% \leq \text{Al}_2\text{O}_3 \leq 12 \text{ mol}\%$ ;  $0 \text{ mol}\% \leq \text{B}_2\text{O}_3 \leq 3 \text{ mol}\%$ ;  $2 \text{ mol}\% \leq \text{K}_2\text{O} \leq 5 \text{ mol}\%$ ;  $4 \text{ mol}\% \leq \text{MgO} \leq 6 \text{ mol}\%$ ; and  $0 \text{ mol}\% \leq \text{CaO} \leq 5 \text{ mol}\%$ , wherein:  $66 \text{ mol}\% \leq \text{SiO}_2 + \text{B}_2\text{O}_3 + \text{CaO} \leq 69 \text{ mol}\%$ ;  $\text{Na}_2\text{O} + \text{K}_2\text{O} + \text{B}_2\text{O}_3 + \text{MgO} + \text{CaO} + \text{SrO} > 10 \text{ mol}\%$ ;  $5 \text{ mol}\% \leq \text{MgO} + \text{CaO} + \text{SrO} \leq 8 \text{ mol}\%$ ;  $(\text{Na}_2\text{O} + \text{B}_2\text{O}_3) - \text{Al}_2\text{O}_3 \leq 2 \text{ mol}\%$ ;  $2 \text{ mol}\% \leq \text{Na}_2\text{O} - \text{Al}_2\text{O}_3 \leq 6 \text{ mol}\%$ ; and  $4 \text{ mol}\% \leq (\text{Na}_2\text{O} + \text{K}_2\text{O}) - \text{Al}_2\text{O}_3 \leq 10 \text{ mol}\%$ ".

XXI. The appellant's arguments as far as relevant to the present decision may be summarised as follows:

The appellant did not consent to the oral proceedings being held by videoconference. Since the appellant aimed at overturning the decision under appeal, a videoconference would put them at a significant disadvantage compared to an in-person hearing.

The expression "substantially free of arsenic" in claim 1 excluded the  $\text{As}_2\text{O}_3$  concentration of 0.33 mol% of Example 3 of D1. Novelty was therefore given.

The submission of auxiliary request 4 was a reaction to the indication in the board's communication that the requirements of Article 56 EPC were not fulfilled. This request should therefore be considered.

All the pending requests fulfilled the requirements of the EPC.

XXII. The respondent's arguments as far as relevant to the present decision may be summarised as follows:

As the priority of the patent in suit was invalid, the main request, main request A, auxiliary requests 1, 2 and 3 and auxiliary requests 1A, 2A and 3A did not fulfil the requirements of Article 54 EPC.

Auxiliary request 4 should have been filed earlier and should therefore not be considered.

XXIII. On substance, the appellant requests that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the main request as submitted with the statement of grounds of appeal.



As an alternative, the appellant requests that the patent be maintained in amended form on the basis of:

- main request A as filed with the submission dated 6 April 2020,
- auxiliary request 1, 2 or 3, all as submitted with the statement of grounds of appeal, or
- auxiliary request 1A, 2A, 3A or 4, all as filed with the submission dated 6 April 2020.

The respondent requests that the appeal be dismissed.

## **Reasons for the Decision**

### 1. Format of the oral proceedings

For the reasons set out below the appellant's request that the oral proceedings be held as an in-person hearing could not be granted.

- 1.1 The appellant had argued in favour of oral proceedings being held as an in-person hearing, as they would "attemp[t] to overturn the decision of the Opposition Division" and a videoconference would "put [them] at a significant disadvantage compared to an in person hearing". According to the appellant, videoconference and in-person hearing were not equivalent because additional layers, such as body language, had more impact at in-person hearings and because an in-person hearing allowed for different ways to react.

However, the appellant did not demonstrate for which specific and precise reasons they were put at a "significant disadvantage" by the hearing held as

videoconference. The complexity of the case is not such that a videoconference was inadequate.

Moreover, due to the ongoing COVID-19 pandemic, an in-person hearing on the EPO premises on the scheduled dates was not appropriate, since the journey to and from Haar as well as the presence of at least five people in the same conference room would have considerably increased the risk of infection.

Given, moreover, that the oral proceedings in the present case had already been postponed by a year, and also for reasons of procedural economy, a further postponement was not appropriate.

1.2 The conclusion to hold the oral proceedings as a videoconference is in line with Article 15a(1) RPBA 2020.

1.3 Moreover, it is in line with the Enlarged Board of Appeal's decision G 1/21, the order of which reads:

"During a general emergency impairing the parties' possibilities to attend in-person oral proceedings at the EPO premises, the conduct of oral proceedings before the boards of appeal in the form of a videoconference is compatible with the EPC even if not all of the parties to the proceedings have given their consent to the conduct of oral proceedings in the form of a videoconference."

According to the Enlarged Board's reasoning, the COVID-19 pandemic is a "general emergency impairing the parties' possibilities to attend in-person oral proceedings at the EPO premises", thus constituting "good reasons" for the conduct of oral proceedings by

videoconference, despite the appellant's explicit wish to go for in-person oral proceedings instead (G 1/21, Reasons 45, 49). Even more so, the continued delay of oral proceedings during a pandemic is a further ground to overrule a party's wish to hold oral proceedings in person (G 1/21, Reasons 51).

In the present case, all these considerations apply and justify to hold oral proceedings by videoconference.

## 2. Priority

It has not been contested that neither the thickness range from 0.2 mm to 0.5 mm nor the inequality  $-15.7 t + 52.5 \leq CT$  contained in claim 1 has a basis in the priority document, i.e. in US provisional application US 61/087,324.

Consequently, the opposition division was correct in concluding that the priority of the patent in suit was not valid (Article 87 EPC).

As a consequence, D1 is prior art under Article 54(2) EPC.

### *Main request*

The claims of the main request are identical to those of the main request underlying the decision under appeal.

3. Novelty

3.1 In the appellant's view, the subject-matter of claim 1 of the main request differs from samples 1 to 3 in Table 3 of D1 in that the aluminosilicate glass has to be "substantially free of arsenic".

However, according to paragraph [0044] of D1, which describes the composition of the glass used in samples 1 to 3,  $\text{As}_2\text{O}_3$  is present in an amount of 0.33 mol%. This amount falls under the expression "substantially free of arsenic".

The term "substantially" in this feature is indeed vague and does not specify a precise limit. The description does not provide a precise definition either. Consequently, this expression has to be construed broadly. Therefore, a content of 0.33 mol%  $\text{As}_2\text{O}_3$  is to be seen as being included within the expression "substantially free of arsenic".

It was not contested that samples 1 to 3 of Table 3 of D1 disclose the remaining features of claim 1 of the main request.

3.2 The appellant submitted that the expression "substantially free" implied an arsenic concentration of at most a three-digit ppm amount, in line, for example, with paragraph [0061] of D4'. The  $\text{As}_2\text{O}_3$  concentration of 3300 mol ppm of paragraph [0044] of D1 clearly exceeded this limit.

However, in contrast with D4', the patent in suit gives no definition of the expression "substantially free". D4' is a patent application and cannot therefore prove

a generally accepted meaning of the expression "substantially free" in this technical field.

- 3.3 In the appellant's view, the feature "substantially free of arsenic" implied that arsenic was not purposively added, contrary to D1, where this is the case (paragraph [0039]). Such an interpretation was in line with paragraph [0028] of D1.

However, such a narrow definition is not supported by the patent in suit. D1, likewise, is a patent application and cannot therefore prove a generally accepted meaning of the expression "substantially free" in this technical field.

Moreover, the arsenic concentration in a glass depends not only on any additions but also on the presence of impurities in the raw materials.

It is therefore not convincing that this feature has such a limited meaning, in particular since claim 1 is directed to an article and not to a method.

- 3.4 The appellant's interpretations of the expression "substantially free" are therefore too narrow.

- 3.5 Since the priority of the patent in suit is not valid, the subject-matter of claim 1 of the main request is anticipated by samples 1 to 3 of Table 3 of D1 within the meaning of Article 54(1) and (2) EPC.

*Main request A, auxiliary requests 1 to 3 and 1A to 3A*

Notwithstanding the question of the admission and consideration of the requests submitted after the

issuance of the board's communication, none of the requests is allowable.

4. Novelty

4.1 Claim 1 of main request A is identical to claim 1 of the main request.

Consequently, the subject-matter of claim 1 of main request A is anticipated for the same reasons as given above (Article 54(1) and (2) EPC).

4.2 Claim 1 of auxiliary requests 1 to 3 and 1A to 3A differs from claim 1 of the main request in that:

- the alkali aluminosilicate glass is additionally "substantially free of ... antimony" and/or
- "the strengthened glass article is one of a cover plate for a portable electronic device, an information terminal device, and a display for a computer".

However, the glass composition used in samples 1 to 3 of Table 3 of D1 does not contain antimony either (paragraph [0044]). Furthermore, D1 discloses an application as a cover plate of a mobile portable electronic device (paragraph [0035]). These points have not been disputed.

Consequently, the added features cannot render the subject-matter of the independent claims of auxiliary requests 1 to 3 and auxiliary requests 1A to 3A novel (Article 54(1) and (2) EPC).

*Auxiliary request 4*

5. Admission/consideration

5.1 With regard to the newly filed auxiliary request 4, the appellant submitted that it was based on paragraph [0037] of the application as originally filed. Its submission was a direct reaction to the board's preliminary opinion (expressed in their first communication under Article 15(1) RPBA 2020) that the then pending requests did not appear to fulfil the requirements of Article 56 EPC.

The appellant was, moreover, of the opinion that the compositional ranges inserted into claim 1 were narrower than the ranges of claim 4 of the other pending requests and thus would not significantly increase the complexity of the case.

The appellant was also of the opinion that the respondent had sufficient preparation time between the submission of auxiliary request 4 and the oral proceedings.

Lastly, auxiliary request 4 would overcome the remaining objections.

5.2 The board, however, notes the following:

- Objections concerning lack of novelty and inventive step were already raised at opposition stage. All amended claims could and should have already been filed during this stage. As a consequence of the objections then raised, also the decision under appeal had already concluded that the requests then

on file lacked novelty or inventive step in view of D1 (see points 1.5, 2.3, 3.3).

- The respondent had raised objections for lack of novelty and inventive step in view of D1 against the then pending requests in the reply to the appeal. This was almost two years prior to the board's first communication.
  
- The newly added features originate from the description and not from a granted claim. The respondent and the board would therefore be confronted with claims not examined by the opposition division. Filing such claims at a very late stage of the appeal proceedings contradicts procedural economy.

Hence, the submission of auxiliary request 4 only after the board's communication does not fulfil the requirement that both sides set out their complete case at the outset of the appeal proceedings (Article 12(3) RPBA 2020).

In addition, the appellant did not provide convincing reasons for the late submission of this request.

Auxiliary request 4 is therefore not considered/ admitted (Articles 13(1) and 25(2) RPBA 2020 and 12(4) RPBA 2007).



**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



C. Vodz

E. Bendl

Decision electronically authenticated