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**Datasheet for the decision
of 15 February 2018**

Case Number: T 0434/16 - 3.3.05

Application Number: 03797022.5

Publication Number: 1583722

IPC: C03C17/36, C03C27/12

Language of the proceedings: EN

Title of invention:

COATED ARTICLE WITH REDUCED COLOR SHIFT AT HIGH VIEWING ANGLES

Patent Proprietor:

Guardian Glass, LLC

Opponents:

AGC Glass Europe
SAINT-GOBAIN GLASS FRANCE

Headword:

Reduced color shift/GUARDIAN

Relevant legal provisions:

EPC Art. 123(2), 83, 54

Keyword:

Amendments - Main request (claims as granted) - extension
beyond the content of the application as filed (yes)
Sufficiency of disclosure - undue burden (no)
Novelty - auxiliary request - implicit disclosure (no)

Decisions cited:

T 0409/91, T 0435/91, T 1743/06

Catchword:



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Case Number: T 0434/16 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 15 February 2018

Appellant: Guardian Glass, LLC
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 7 December 2015
revoking European patent No. 1583722 pursuant to
Article 101(3) (b) EPC**

Composition of the Board:

Chairman E. Bendl
Members: J.-M. Schwaller
 R. Winkelhofer

Summary of Facts and Submissions

I. The present appeal lies from the decision of the opposition division to revoke European patent No. 1 583 722, independent claim 1 whereof reads as follows:

"1. A coated article including a coating or layer system supported by a glass substrate, the coating (27) or layer system comprising from the glass substrate (1) outwardly:

*a) a titanium oxide inclusive layer (3);
b) a zinc oxide inclusive contact layer (7), contacting the silver layer c);
c) a silver inclusive layer (9) contacting the zinc oxide inclusive layer (7) b);
d) a nickel chrome oxide inclusive layer (11) contacting the silver inclusive layer c); and
e) a tin oxide inclusive layer (13);
f) a zinc oxide inclusive layer (17);
g) a silver inclusive layer (19);
h) a nickel chrome oxide inclusive layer (21);
and i) a silicon nitride inclusive layer (25);
wherein the coated article has a sheet resistance (R_s) of no greater than 5.0 ohms/square, and wherein the coated article has a Δa^*_g (glass side reflective) value, measured monolithically, of no greater than 3.0 over a viewing angle shift of about 60 degrees; and wherein the titanium oxide inclusive layer (3) has a thickness of from 4 to 15 nm."*

II. In its decision, the opposition division held the above claim 1 to infringe Article 123(2) EPC. During the proceedings before the opposition division, an auxiliary request 7 with a claim 1 reading as follows

had been filed (amendment with respect to claim 1 as granted highlighted by the board):

"1. A coated article including a coating or layer system supported by a glass substrate, the coating (27) or layer system comprising from the glass substrate (1) outwardly:

- a) a titanium oxide inclusive layer (3);
- b) a zinc oxide inclusive contact layer (7), contacting the silver layer c);
- c) a silver inclusive layer (9) contacting the zinc oxide inclusive layer (7) b);
- d) a nickel chrome oxide inclusive layer (11) contacting the silver inclusive layer c);
- e) a tin oxide inclusive layer (13);
- f) a zinc oxide inclusive layer (17);
- g) a silver inclusive layer (19);
- h) a nickel chrome oxide inclusive layer (21); and
- i) a silicon nitride inclusive layer (25);

wherein the coated article has a sheet resistance (R_s) of no greater than 5.0 ohms/square, and wherein the coated article has a Δa^*_g (glass side reflective) value, measured monolithically, of no greater than 3.0 over a viewing angle shift of about 60 degrees; and wherein the titanium oxide inclusive layer (3) has a thickness of from 4 to 15 nm, **wherein the coated article is not tempered or heat bent.**"

The opposition division held this claim to lack novelty over document E1 (WO 03/033427 A1) and argued in particular that the feature " Δa^*_g (glass side reflective) value, measured monolithically, of no greater than 3.0" was inherently achieved by the coating stack according to E1.

- III. With its grounds of appeal of 13 April 2016, the patentee ("the appellant") contested the above decision, maintained the claims as granted as its main request and filed thirteen auxiliary requests, auxiliary request 7 being identical to auxiliary request 7 as filed before the opposition division.
- IV. With their respective responses to the grounds of appeal, opponents 1 and 2 ("respondent I" and "respondent II") *inter alia* raised objections under Articles 123(2), 83, 54 and 56 EPC against the different sets of claims underlying the appeal. Respondent I submitted a declaration by Dr H. Weis comprising simulations on stacks according to document E1.
- V. At the oral proceedings, the discussion focused in particular on the allowability under Article 123(2) EPC of claim 1 as granted as well as on admissibility, sufficiency of disclosure of the invention and novelty of the subject-matter of claim 1 of auxiliary request 7. The appellant then made auxiliary request 7 its new auxiliary request 1.
- VI. At the closure of the debate, the parties' requests were as follows:

The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted, or alternatively in amended form on the basis of auxiliary request 1 filed as auxiliary request 7 on 13 April 2016, or alternatively on the basis of one of auxiliary requests 2 to 7, filed on 13 April 2016 as auxiliary requests 1 to 6 respectively, or further alternatively on the basis of one of auxiliary requests 8 to 13, also filed on 13 April 2016.

The respondents requested that the appeal be dismissed.

VII. The arguments of the parties which are relevant for the present decision may be summarised as follows:

- For the **appellant**, a skilled person understood from the original disclosure as a whole that the absence of heat treatment was not mandatory. Among the six independent claims originally filed, only one (claim 19) required the absence of heat treatment; Figure 1 and its associated text were likewise silent on any such treatment; paragraph [0038] explicitly referred to both alternatives of absence or presence of heat treatment. Therefore there was a basis in the application as filed for the omission in claim 1 as granted of the feature "wherein the coated article is not tempered or heat bent", and the requirements of Article 123(2) EPC were met.

Auxiliary request 1 corresponded to auxiliary request 7 already presented at the oral proceedings before the opposition division and should therefore be admitted.

The respondents' objections concerning lack of sufficient disclosure related to the broadness of the claims, i.e. to Article 84 EPC rather than to Article 83 EPC. Respondent I's simulations showed that the claimed coated articles could be reproduced.

The claimed subject-matter possessed novelty because E1 did not disclose a Δa^*_g (glass side reflective) value no greater than 3.0.

- For the **respondents** there was no basis in the application as filed for the omission concerning the absence of heat treatment. This was in particular derivable from claim [0019] as filed, which held this feature to be mandatory.

Auxiliary request 1 was not to be admitted.

The invention was insufficiently disclosed. Evidence was provided by the simulations filed before the opposition division, which showed that there was a lack of guidance regarding the identification of those embodiments having a Δa^*_g (glass side reflective) value no greater than 3.0. The opposed patent was thus no more than an invitation to perform a new research programme.

Claim 1 of auxiliary request 1 lacked novelty over E1; this was shown in particular by the simulations made by Dr Weis.

Reasons for the Decision

Main request

1. Allowability under Article 123(2) EPC of claim 1 as granted

The subject-matter of claim 1 as granted is not directly and unambiguously derivable from the application as filed for the following reasons:

- 1.1 Claim 19 as originally filed discloses a coated article having all the features of claim 1 as granted, except for the thickness "of from 4 to 15 nm" for the titanium

oxide inclusive layer, for which there is a basis in paragraph [0022] as filed.

In claim 19 as filed, however, the coated article was defined as being "not tempered or heat bent", a feature which is absent from current claim 1 as granted, and so the question arises whether there is a basis in the application as filed for this omission.

1.2 For the board, the answer to this question is negative, even in the light of the content of the application as filed as a whole, as argued by the appellant. The reasons are as follows:

1.2.1 Paragraph [0013] of the application defines the invention as being based on "thinning the titanium oxide layer located below the bottom silver layer in the aforesaid conventional coating", and paragraphs [0004] and [0005] as filed explain that said "conventional coating" is in the present context to be understood as "non-HT", i.e. not heat-treated. Since the invention is described as an improvement of said "conventional coating" (see paragraph [0013]), the claimed invention relates to coated articles not having been tempered or heat bent.

1.2.2 The appellant argued that paragraph [0038] as filed serves as a basis for the omission of the above feature.

The board observes that this paragraph discloses that "*heat treatment may be performed in other embodiments of this invention*", but the "other embodiments" are not described as being those defined in independent claim 19 as filed. Paragraph [0038] in fact puts the emphasis on embodiments "*absent any significant heat treatment*

such as tempering or heat bending", and describes these as having the *"low-E (low emissivity) characteristics set forth in Table 3"*, i.e. embodiments having in particular a sheet resistance $R_s \leq 5.0$ ohms/square, such as those of claim 19. This is the sole independent claim - among six - which includes this particular sheet resistance and the feature whereby the coated article is "not tempered or heat bent" as features essential for the performance of the invention.

Therefore, the above argument is not convincing.

1.2.3 The same conclusion arises with the appellant's further arguments that Figure 1 and independent claims 1, 12, 20, 26 and 27 are silent on the question of whether or not heat treatment is needed, because silence in this respect cannot be seen as an indication that heat treatment was or was not to be carried out, let alone as an indication that the feature defining the absence of tempering or heat bending could be omitted from claim 19.

1.3 It follows from the above considerations that there is no direct and unambiguous basis in the application as filed for the omission in claim 1 as granted of the feature "not tempered or heat bent".

Claim 1 as granted therefore does not meet the requirements of Article 123(2) EPC.

Auxiliary request 1

2. Admissibility

As pointed out in section II above, auxiliary request 1 was already presented as auxiliary request 7 in the

proceedings before the opposition division and was discussed in the appealed decision. In its grounds of appeal the appellant gave reasons why it considered the appealed decision to be incorrect. Thus, considering also that the said request already forms part of the appeal proceedings according to Article 12(1)(a) RPBA, there are no reasons not to admit auxiliary request 1.

3. Article 123(2) EPC

By inserting the feature "wherein the coated article is not tempered or heat bent" in claim 1 the appellant overcame the objection discussed above (see point 1 above). Thus, the requirements of Article 123(2) EPC are met. The respondents did not raise any objection in this respect.

4. Sufficiency of disclosure

4.1 It is established case law that the requirements for sufficiency of disclosure under Article 83 EPC are met if the claimed invention could have been performed on the filing date of the application by a person skilled in the art in the whole area claimed without undue burden, using common general knowledge and having regard to further information given in the patent in suit (see e.g. T 409/91, OJ 1994, 653, Reasons 3.5; T 435/91, OJ 1995, 188, Reasons 2.2.1; T 1743/06, Reasons 1.1).

4.2 In the case at issue, the claimed invention relates to a coated glass article defined, on the one hand, by
- two parameters:
i) a sheet resistance R_s no greater than 5 ohms/square; and

- ii) a Δa^*_g (glass side reflective) value, measured monolithically, of no greater than 3.0 over a viewing angle shift of about 60 degrees,
- and, on the other hand, by
- a sequence of nine layers, each layer being defined by its chemical composition.

4.3 Regarding the question of whether the above invention could have been performed at the filing date of the application by a person skilled in the art, paragraphs [0025] to [0031] of the contested patent disclose ample details of the compositions and thicknesses of the individuals layers. Paragraph [0039] furthermore discloses specific examples of coated glasses which fall under the terms of the claimed subject-matter, as well as the processing techniques used for sputtering the respective coatings, such that the skilled person is informed of several ways of carrying out the invention in detail.

4.4 Assuming, in the respondents' favour, that respondent I's computer simulations were admitted into the appeal proceedings, the board cannot concur with the argument that these computer simulations provide evidence of a lack of guidance or gap of information in the contested patent, because they merely show that coated articles having the claimed sequence of layers and having a Δa^*_g (glass side reflective) value smaller than 3.0 can be produced. They do not show, however, that the specific embodiments illustrated in the examples would not be reproducible.

4.5 The board also cannot concur with the respondents' argument that the opposed patent was no more than an invitation to perform a research programme to identify those embodiments having a Δa^*_g value no greater than

3.0, because the skilled person knows how further coated articles falling within the scope of protection can be easily envisaged and prepared, for instance by slightly varying the compositions and thicknesses in the specific embodiments disclosed in the examples or in those identified as preferred embodiments in the contested patent. This kind of experimentation does not amount to an undue burden - as argued by the respondents - but merely represents routine experimentation for a skilled practitioner.

4.6 As in the present case the burden of proof is upon the opponents (respondents) to show that a skilled person was unable to carry out the invention, and since none of the examples or specific embodiments have been reworked by them in order to identify any gap of information, it follows that there is no reason to believe that the patent is not reproducible, and so the patent does not suffer from any deficiency under Article 83/Article 100(b) EPC.

5. Novelty

5.1 E1, which the respondents held to anticipate the claimed subject-matter, discloses (claims 1 and 3; paragraph [0028]) a coated article comprising: a glass substrate coated with a layer system comprising from the glass substrate outwardly:

- a) a titanium oxide inclusive layer having a thickness of from preferably 10 to 40 nm;
- b) a zinc oxide inclusive contact layer having a thickness of from preferably 4 to 15 nm;
- c) a silver inclusive layer having a thickness of from preferably 5 to 25 nm;
- d) a nickel chrome oxide inclusive layer having a thickness of from preferably 1.5 to 6 nm;

e) a tin oxide inclusive layer having a thickness of preferably at most 100 nm;
f) a zinc oxide inclusive layer having a thickness of from preferably 4 to 15 nm;
g) a silver inclusive layer having a thickness of from preferably 5 to 25 nm;
h) a nickel chrome oxide inclusive layer having a thickness of from preferably 1.5 to 6 nm; and
i) a silicon nitride inclusive layer having a thickness of preferably at most 50 nm;
the coated article having a visible transmission of at least about 70% and the layer system having a sheet resistance (R_s) of no greater than 5.0 ohms/square.

5.2 It is observed that E1 does not address the Δa^*_g (glass side reflective) parameter at all, and so the question arises whether the claimed value "of no greater than 3.0" for this parameter was inherently achieved in the coating stack according to E1, as alleged by the respondents and as concluded by the opposition division.

5.3 The simulations made by respondent I do not support the respondents' argumentation in this respect, because despite the three simulated stacks identified as Ref. 11, 12 and 13 in the declaration of Dr Weis of 19 October 2016 which have a Δa^*_g (glass side reflective) value smaller than 3.0, the layers' sequence selected in these simulations does not appear to reflect the disclosure of E1. In fact, none of the simulations follows the teaching of the Example according to E1, and the thickness values chosen for the silicon nitride layer in Ref. 11, 12 and 13 were combined with the thickness values of an SnO_2 layer to amount to a total of 36.6 nm and therefore fall outside the "more preferred" range of from 12 to 32 nm, while

the thicknesses of the other layers have been chosen to be inside the "more preferred" ranges disclosed on pages 9 and 10 of E1. Given this combination of layers, the thickness of the Si₃N₄ layer in the simulation cannot be determined at all. Moreover, the series of simulations filed on 4 September 2015 (Table 1 of the declaration of Dr Weis) show that small thickness variations in a layer can lead to substantial variations of the Δa^*_g parameter, with values as high as 10 or even greater, which are far away from the value defined in claim 1 at issue.

5.4 It follows from the above considerations that by carefully selecting certain thickness values within the ranges of values disclosed in E1, one may incidentally fall within the scope of protection of claim 1 at issue. However, as explained above, the combination of selected values of thicknesses for the individual layers does not reflect the disclosure of E1, and at least the **combination** of said selected values is not directly and unambiguously derivable from E1, with the consequence that it cannot be directly and unambiguously concluded that the Δa^*_g value of the coating stack according to E1 would **inevitably** be no greater than 3.0, as required by the claimed subject-matter. Therefore, claim 1 at issue, and by the same token claims 2 to 6 which depend thereon, is novel and so meets the requirements of Article 54 EPC.

6. Since the reasons which led to the revocation of the patent no longer apply, and since the appellant as well as respondent II had requested remittal of the case to the department of first instance, the board exercises its discretion under Article 111(1) EPC and remits the case to the opposition division for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution on the basis of auxiliary request 1, submitted as auxiliary request 7 with the grounds of appeal of 13 April 2016.

The Registrar:

The Chairman:



C. Vodz

E. Bendl

Decision electronically authenticated