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Datasheet for the decision of 31 July 2012

Case Number: T 1232/09 - 3.3.05

Application Number: 01914608.3

Publication Number: 1261558

IPC: C03C 17/36

Language of the proceedings: EN

Title of invention:
Low-emissivity glass coatings having a layer of silicon oxynitride and methods of making same

Patentee:
Guardian Industries, Inc.

Opponents:
Pilkington Deutschland AG
SAINT-GOBAIN GLASS FRANCE

Headword:
SiO_XN_Y Layer/GUARDIAN

Relevant legal provisions:
EPC Art. 56, 83
RPBA Art. 12(2), 13(1)(3)

Keyword:
"Main request and auxiliary requests 1 to 5: Inventive step (no) - obvious alternative"
"Auxiliary request 6: Inventive step (yes) - non-obvious alternative"

Decisions cited:
-

Catchword:
-

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Case Number: T 1232/09 - 3.3.05

D E C I S I O N
of the Technical Board of Appeal 3.3.05
of 31 July 2012

Appellant: (Opponent 2)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 7 April 2009 rejecting the opposition filed against European patent No. 1261558 pursuant to Article 101(2) EPC.

Composition of the Board:

Chairman: G. Raths
Members: J.-M. Schwaller
D. Prietzel-Funk

Summary of Facts and Submissions

I. This appeal lies from the decision of the opposition division to reject the opposition filed against European patent Nr. 1 261 558 granted with twelve claims, three of which were independent, with claim 1 reading:

"*1. A surface-coated glass article comprised of a glass substrate and a multiple layer coating on a surface of the glass substrate, wherein said coating includes at least one layer of a transparent dielectric material adjacent the surface of the glass substrate, a layer of nickel or nichrome, and a layer of silicon oxynitride interposed between said layer of dielectric material and said layer of nickel or nichrome.*"

II. In the opposition proceedings, the patent was attacked under Articles 100(a) and 100(b) EPC.

III. The following documents cited during the opposition proceedings are relevant for the present decision:

D1: EP 0 796 825 A2, and

D2: EP 0 718 250 A2.

IV. In the contested decision, the opposition division held in particular that the patent in suit met the requirements of Articles 56 and 83 EPC. In essence it held the above-claimed subject-matter to involve an inventive step for the following reasons: starting from document D1 as representing the closest state of the art, the problem underlying the patent was to be seen

in the provision of an alternative coated glass having mechanical durability; the patent proposed as a solution to said problem the surface-coated glass article according to above claim 1; the substitution in the coated glass article known from D1 of the silicon nitride material of the interlayer by silicon oxynitride was not suggested by document D2, because silicon oxynitride was used in D2 for a different purpose - namely as a barrier layer for oxygen - and so there was no hint to replace silicon nitride with silicon oxynitride.

V. With its grounds of appeal dated 7 August 2009, the opponent (hereinafter "appellant") objected to the contested patent under Articles 83 and 56 EPC and submitted four new documents (D6 to D9), in particular:

D6: L. Pinard et al., "*Optical losses of multilayer stacks synthesized with silicon oxynitride by r.f. magnetron sputtering*", Thin Solid Films 333 (1998), pages 126 to 133, and

D7: EP 0 279 550 B1.

On the insufficiency of disclosure issue, the appellant argued that there was a gap of information concerning the thickness and the stoichiometry of the silicon oxynitride layer necessary for achieving the improvement in terms of mechanical durability underlying the alleged invention. It further referred to D6, which taught that SiO_2 was produced with an atmosphere containing more than 7% of oxygen, and it thus expressed strong doubts as to the possibility of producing a layer of silicon oxynitride with the gas

containing 10% oxygen of the example in the patent in suit.

Regarding lack of inventiveness, it argued that the claimed subject-matter was obvious when starting from document D1 in combination with the teaching of document D2, or alternatively with that of documents D6 or D7.

VI. With letter dated 16 December 2009, the patentee (hereinafter "respondent") requested the board not to admit the four new documents filed by the appellant. The respondent challenged the objections raised by the appellant and argued in particular that the problem underlying the invention was to provide an alternative coated glass having improved or at least similar mechanical durability compared to the corresponding glasses known from document D1. Document D2, which addressed a different problem, was not combinable with the disclosure of D1, so that the appeal should be dismissed.

VII. In a further submission dated 5 August 2011, the respondent declared that auxiliary requests 1 to 6 filed in the first-instance proceedings were maintained also in the appeal proceedings as an auxiliary measure.

Independent claims 1 and 5 of the first auxiliary request differ from the respective claims of the main request in that the multiple-layer coating is specified as having been "*sputtered*".

Independent claims 1, 5 and 11 of the second auxiliary request differ from the respective claims of the main

request in that the dielectric material is defined as being "*an oxide*".

In the independent claims of the third auxiliary request the dielectric material has been further defined as being "*at least one selected from the group consisting of TiO_2, BiO_3, PbO and mixtures thereof*".

Claims 1, 5 and 11 of the fourth auxiliary request differ from the respective claims of the main request in that the multiple-layer coating is specified as being a "*low-E*" coating and in that the nickel or nichrome layer is defined as having "*a thickness between 2 to 20 Å*".

Claims 1, 5 and 11 of the fifth auxiliary request differ from the respective claims of the main request in that the multiple-layer coating is specified as being a "*low-E*" coating. Further, in claims 1 and 11, the multiple-layer low-E coating is defined as further comprising "*a layer of silver*".

In the sixth auxiliary request, the two remaining independent claims read as follows:

"*1. A surface-coated glass article comprised of a glass substrate and a multiple layer low-E coating comprising the following layers formed on a surface of the glass substrate, from the surface outwardly:*
(1) a layer of transparent dielectric material;
(2) a layer of silicon oxynitride;
(3) a first layer of nickel or nichrome;
(4) a layer of silver;
(5) a second layer of nickel or nichrome;

(6) a layer of Si_3N_4.

7. A method of making a surface-coated glass article comprising sputtercoating on a surface of a glass substrate a multiple layer low-E coating comprising the following layers formed on a surface of the glass substrate, from the surface outwardly:
(1) a layer of transparent dielectric material;
(2) a layer of silicon oxynitride;
(3) a first layer of nickel or nichrome;
(4) a layer of silver;
(5) a second layer of nickel or nichrome;
(6) a layer of Si_3N_4."

Dependent claims 2 to 6 and 8 to 12 represent specific embodiments of the subject-matter of claims 1 and 7, respectively.

VIII. Further submissions were received from the respondent and from the appellant with letters dated 22 June and 2 July 2012, respectively. With the later, the appellant also submitted two new documents:

Exhibit 1: T. Larson et al., "*A model for reactive sputtering with magnetrons*", Vacuum, 39, 10, pages 949 to 954 (1988).

Exhibit 2: T. Larson et al., "*A physical model for eliminating instabilities in reactive sputtering*", J. Vac. Sci. Technol., A6 (3), pages 1832 to 1836 (1988).

IX. At the oral proceedings, which took place on 31 July 2012, the appellant requested the board to disregard these documents and not to allow the auxiliary requests

into the proceedings, because they had not been filed in writing. The chairman informed the parties that all the documents filed by both parties were admitted into the proceeding as well as the auxiliary requests which had been filed in writing during the first-instance proceedings. The discussion focussed on the issues of disclosure of the invention and inventive step, with particular attention to the combination of the content of D1 with the teaching of document D2 or D6.

X. The parties' requests were established as follows:

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

The respondent requested that the appeal be dismissed (main request), or alternatively that the decision under appeal be set aside and that the patent be maintained on the basis of the claims according to one of the auxiliary requests 1 to 6 filed on 9 January 2009 before the opposition division.

Reasons for the Decision

1. *Admissibility of documents and requests*

1.1 The new documents (D6 to D9) were submitted by the appellant with the grounds of appeal, and so they fulfill the requirements of Article 12(2) RPBA.

The other two documents (Exhibit 1 and 2) were filed by the respondent one month before the oral proceedings.

It explained that they had been filed in reaction to the filing of documents D6 to D9.

The board observes that the parties had sufficient time to take all this new technical material into due consideration, and so it does not see any reason to disregard the content of any of these documents.

1.2 Regarding auxiliary requests 1 to 6, the respondent declared on 5 August 2011 that these requests filed in the first-instance proceedings were "maintained in the appeal proceedings".

With this declaration, the board considers that said requests were formally introduced into the appeal proceedings on 5 August 2011. The sole fact that they were submitted only by reference and not in written form cannot be seen as a serious ground for disregarding them during the appeal proceedings.

1.3 The board therefore decides, in the exercise of its discretion under Articles 13(1) and (3) RPBA, to admit auxiliary requests 1 to 6, documents D6 to D9 and Exhibits 1 and 2 into the appeal proceedings.

2. *Sufficiency of disclosure of the invention*

2.1 The board observes that multilayer coated glasses of the type defined in the claims at issue are commonly known, and their manufacture, for instance by sputtering, is also commonly known to the skilled person. The sputtering of the different specific materials used in the multilayer coating defined in the claims is also common general knowledge. Reference is

hereby made to the plethora of prior art documents in the present appeal proceedings which show that it was conventional at the date of priority to produce from said materials such multilayer coatings on a glass substrate.

2.2 The appellant's assertions of insufficient disclosure of the invention are not accepted because there is no experimental evidence in the file to suggest that the example in the contested patent is not reproducible or would not lead to a product falling within the terms of the claimed subject-matter. But as proof of insufficiency of disclosure the identification of a gap of information is required. As to the thickness and stoichiometry of the silicon oxynitride layer needed for achieving the improvement in terms of mechanical durability underlying the alleged invention, the acknowledgement of an improvement is an issue to be dealt with under the success of the solution, i.e. Article 56 EPC. As regards the argument that, according to D6, an atmosphere containing more than 7% of oxygen would not lead to silicon oxynitride, the board observes that this result has been achieved with a sputtering device (Leybold Z550 - rf magnetron sputtering single chamber) different from the one (Airco multi-chamber DC sputter-coater) used in the contested patent. It follows that this teaching is not necessarily transferable to the industrial apparatus used for manufacturing the coated glass at issue in the contested patent.

2.3 For the board, it follows from the above that the invention as defined in all the requests at issue is disclosed in a manner sufficiently clear and complete

for it to be carried out by a person skilled in the art and therefore the requirements of Articles 83 and 100(b) EPC are fulfilled.

3. Novelty

Novelty was not an issue in these proceedings. The board nevertheless observes that none of the known prior art documents discloses the combination of features defined in the different independent claims at issue. In particular, document D1 - which was acknowledged by the parties as representing the closest prior art - discloses the sequence of layers defined in the independent claims of all the requests at issue, with the difference that a layer of silicon nitride Si_3N_4 is interposed between the layer of dielectric material and the first layer of nickel or nichrome. In comparison, in the subject-matter claimed this interlayer is made of silicon oxynitride. The board is therefore satisfied that the requirements of Article 54(1) and (2) EPC are fulfilled for the different independent claims at issue, as well as for the respective dependent claims.

4. Main request - inventive step

Applying the problem-solution approach developed by the boards of appeal, the board came to the conclusion that claim 1 of the patent as granted fails to fulfill the requirements of Article 56 EPC for the following reasons:

4.1 The alleged invention (paragraph [0004] of the contested patent) concerns a surface-coated glass

article having improved durability and transmission and a method of making such an article.

4.2 The parties acknowledged document D1 as the starting point for assessing inventive step, as this document relates to coating systems for glass substrates intended for the same purpose as the subject-matter of claim 1 at issue, in particular as regards their mechanical durability (D1, page 3, lines 36 to 40).

4.3 Document D1 discloses in particular in its claim 1 a sputter-coated glass article comprised of a glass substrate having on a surface thereof, from the glass outwardly, a layer system including:

a) a layer of a transparent dielectric material having an index of refraction (n) of about 2.5-2.6 as measured at a wavelength of 550 nanometers;

b) a layer of Si_3N_4;

c) a layer of nichrome;

d) a layer of silver;

e) a layer of nichrome; and

f) a layer of Si_3N_4,

and wherein when said glass substrate has a thickness of about 2 to 6 mm, said coated glass substrate has a normal emissivity (E_n) of about 0.06 or less, a hemispherical emissivity (E_h) of about 0.07 or less, a sheet resistance (R_s) of about 5.0 ohms/sq. or less and

a substantially neutral visible reflected colour when viewed from the glass side.

4.4 As regards the problem underlying the alleged invention, according to the respondent this lies in the provision of a coated glass article having improved or at least equivalent mechanical durability in comparison to the coated glasses known from document D1.

4.5 As a solution to this technical problem the contested patent proposes the surface-coated glass article according to claim 1 as granted, which is characterised in particular in that a layer of silicon oxynitride is interposed between the layer of dielectric material and the layer of nickel or nichrome.

4.6 On the question whether the problem identified in point 4.4 has been effectively solved, the board observes that there is no evidence either in the patent in suit or in the file that the **three**-layered coated glass defined in claim 1 as granted gives rise as such to any particular effect or advantage, in particular as regards its mechanical durability, let alone with respect to the surface-coated glass known from document D1.

The board notes that the sole evidence that the coated glasses disclosed in the patent in suit give rise to any effect can be found in the examples of the contested patent, which describe in detail the preparation (Example 1) and testing (Example 2) of a **six**-layered low-emissivity coated float-glass substrate bearing a coating sequence consisting, from the glass surface outwardly, of the following materials:

- TiO_2
- SiO_xN_y
- NiCr
- silver
- NiCr
- Si_xN_y.

The above very specific six-layered coated glass is however in no way comparable with the very broadly defined three-layered coated glass of claim 1 as granted, for which no evidence of any effect has been provided at all.

At the oral proceedings before the board, the respondent argued that in the claimed three-layered coated glass the silicon oxynitride interlayer provided for a better adherence of the upper layers.

This argument is not accepted because, on the one hand, it was contested by the appellant, and on the other hand, the respondent did not provide any evidence to support its allegations. In this context, according to the jurisprudence of the boards of appeal, the problem is to be reformulated in the less ambitious terms of the provision of an alternative surface-coated glass article. The board is satisfied that this problem has been solved.

4.7 It remains to be decided whether the proposed solution is obvious in view of the state of the art.

In the board's view, the solution proposed in claim 1 as granted is obvious in particular from the content of document D2, which relates to a similar multilayer-

coated low-emissivity glass and which discloses (page 3, lines 5 to 19) a coating consisting of a stack of layers comprising at least one metallic layer having low emissivity in the infrared range and two coatings based on dielectric material located below and over said metallic layers, and a further protective metallic layer placed immediately over and in contact with the layers having low emissivity in the infrared range; and further containing i) a second coating based on dielectric material including a barrier layer for the diffusion of oxygen selected from silicon oxide, silicon oxynitride SiO_xN_y or oxycarbide SiO_xCy, silicon or aluminum nitrides, or carbides, of a thickness of at least 10 mm and having low emissivity in the infrared range and being in direct contact with the underlying dielectric coatings.

It can be observed from the above feature i) that the authors of D2 considered the silicon oxynitride and silicon nitride materials to be technically equivalent and so interchangeable in a layer intended for use as an oxygen diffusion barrier in a multilayered low-emissivity glass article.

The skilled person seeking an alternative to the glass article known from document D1 would take into consideration the above teaching that these materials are interchangeable, in particular in the present situation where no particular advantage arises from the particular stack of layers defined in claim 1 as granted, and would thus arrive in an obvious way at the subject-matter of claim 1 at issue.

The respondent argued that the SiO_xN_y layer in D2 had another functionality, namely that it was used as an oxygen diffusion barrier, and therefore it could not be combined with the teaching of D1 in order to achieve the required mechanical durability. The board cannot accept this argument because, as explained above, there is no evidence that the claimed three-layer coating achieves any effect, let alone an improved or even equivalent mechanical durability in comparison to the coated glass article known from D1. It follows that any material that might replace the Si_3N_4 of D1 can be used as an alternative, and this is plainly the case of silicon oxynitride.

Therefore the subject-matter of claim 1 as granted lacks an inventive step and so does not meet the requirements of Article 56 EPC.

5. First auxiliary request - inventive step

5.1 The considerations in points 4.1 to 4.6 above apply identically, except, with respect to point 4.5, that in the solution as proposed in claim 1 of this request the multiple-layer coating is defined as having been sputtered.

5.2 As to the question of obviousness, for the board the solution thus proposed is obvious in view of the state of the art. The reasons are identical to those indicated in point 4.7 above, because the multilayered coating of document D1 is prepared by the same technique as the one defined in claim 1 at issue (see in particular D1; claim 1, which reads "*A* ***sputter-coated*** *glass article …*").

5.3 It follows from the above that the process according to claim 1 at issue is derivable in an obvious manner from the combined teachings of documents D1 and D2. Therefore claim 1 of this request does not meet the requirements of Article 56 EPC.

6. Second auxiliary request - inventive step

6.1 The considerations in points 4.1 to 4.6 above apply identically, except, with respect to point 4.5, that in the solution as proposed in claim 1 of this request the dielectric material is defined as being an oxide.

6.2 As to the question of obviousness, for the board the solution thus proposed is obvious in view of the state of the art. The reasons are identical to those indicated in point 4.7 above, because in the multilayered coating of document D1 the dielectric is made from the same material as the dielectric in claim 1 at issue (see in particular D1, claim 2 where the dielectric is defined to be an **oxide**, since it is "*selected from* TiO_2, Bi_2O_3, *PbO or mixtures thereof, …*").

6.3 It follows that the process according to claim 1 of this request is derivable in an obvious manner from the combined teachings of documents D1 and D2. Claim 1 therefore does not meet the requirements of Article 56 EPC.

7. Third auxiliary request - inventive step

The reasoning is identical to that in points 6.1 to 6.3 above, with the exception that in the solution as

proposed in claim 1 of this request the dielectric material is defined as being "*selected from the group consisting of* ***TiO_2, Bi_2O_3, PbO and mixtures*** *thereof*".

8. Fourth auxiliary request - inventive step

8.1 The considerations in points 4.1 to 4.6 above apply identically, except, with respect to point 4.5, that in the solution as proposed in claim 1 at issue the multiple-layer coating is defined as being a low-E coating and the nickel or nichrome layer is defined as having a thickness between 2 to 20 Å.

The board observes that the term "low-E" is common in the field and means low emissivity.

8.2 As to the question of obviousness, for the board the solution thus proposed is obvious in view of the state of the art. The reasons are identical to those indicated in point 4.7 above, because the multilayered coating in document D1 is also of the "low-E" type (see D1, page 2, lines 10 to 11: *This invention relates to coating systems for glass substrates which exhibit very* ***low emissivity*** *values …*") and the nichrome layers of the specific embodiment disclosed in the table at page 10, lines 35 to 47 of D1 have thicknesses of **20 Å and 7 Å** and so fall within the range defined in claim 1 at issue.

8.3 It follows that the process according to claim 1 of this request is derivable in an obvious manner from the combined teachings of documents D1 and D2. Claim 1 therefore does not meet the requirements of Article 56 EPC.

9. Fifth auxiliary request - inventive step

9.1 The considerations in points 4.1 to 4.6 above apply identically, except, with respect to point 4.5, that in the solution as proposed in claim 1 of this request the multiple-layer coating is defined as being a low-E coating and as further containing a layer of silver.

9.2 As to the question of obviousness, for the board the solution thus proposed is obvious in view of the state of the art. The reasons are identical to those indicated in point 4.7 above, because the multilayered coating in document D1 is also described as being of the "low-E" type (D1, page 2, lines 10 to 11: "*This invention relates to coating systems for glass substrates which exhibit very* ***low emissivity*** *values …*") and as containing a **layer of silver** (D1, claim 1).

9.3 It follows that the process according to claim 1 of this request is derivable in an obvious manner from the teachings of documents D1 and D2. Claim 1 therefore does not meet the requirements of Article 56 EPC.

10. Sixth auxiliary request - inventive step

10.1 The considerations in points 4.1 to 4.4 above apply identically.

10.2 The solution proposed by the contested patent lies in the surface-coated glass article according to claim 1 at issue, which is characterised in particular in that the multiple-layer coating is defined as being a low-E coating and in that it comprises the following six

layers formed on the glass surface, from the surface outwardly:

(1) a layer of transparent dielectric material,
(2) a layer of silicon oxynitride,
(3) a first layer of nickel or nichrome,
(4) a layer of silver,
(5) a second layer of nickel or nichrome,
(6) a layer of Si_3N_4.

10.3 On the question whether the problem indicated in point 4.4 above has effectively been solved, the board observes that there is evidence that the claimed six-layered coating passed the mechanical durability test (see Examples I and II of the patent in suit).

At the same time, the coated glasses according to the closest prior-art document D1 have been subjected to the same mechanical durability test and have passed the test too (D1, page 13, lines 16 to 20).

It follows that as both glasses passed the same test and since no comparative quantitative testing has been performed, an improvement in terms of mechanical durability cannot be acknowledged for the claimed coated glass. In this context, the problem underlying the invention lies at best in the provision of an alternative, i.e. a coated glass article having a mechanical durability equivalent to that of the coated glass known from document D1.

10.4 On the question whether the proposed solution is obvious in view of the state of the art, the respondent argued that the substitution of the Si_3N_4 interlayer

with a silicon oxynitride interlayer was suggested by documents D2, D6 and/or D7.

10.4.1 D2 discloses in particular - as already indicated in point 4.7 above - that silicon oxynitride and silicon nitride can be interchanged in a stack of layers suitable for a low-emissivity glass article.

10.4.2 The purpose of using silicon (oxy)nitride as an interlayer in the low-emissivity glass articles of D2 is however a different one from that in the patent in suit, since the said material is foreseen as a barrier layer against oxygen and/or alkali metal diffusion, while in the patent in suit the same material has a totally different purpose, since it is supposed to improve the mechanical durability of the multilayer stack.

It follows that the skilled person seeking a multilayer coating having a mechanical durability equivalent to the coating known from document D1 would not find in document D2 any incentive to use silicon oxynitride as a substitute for silicon nitride, and so would also not arrive at the subject-matter of claim 1 at issue.

For the sake of argument, the board observes that even if the skilled person had the idea of substituting silicon nitride with silicon oxynitride, he would still not arrive at the subject-matter of claim 1 at issue, because instead of the interlayer of nickel or nichrome defined in the claimed subject-matter, D2 requires the use of zinc oxide in the layer located below the silver layer.

10.4.3 Document D6 (see "1. Introduction") concerns a scientific study which aims at overcoming the drawbacks of the materials SiO_2 and Si_3N_4 used in multilayers for optical applications, such as high-reflectivity mirrors and antireflective coatings at 1064 nm. In particular, the problem encountered with Si_3N_4 concerns "a large mechanical stress and a small optical gap". In order to solve this problem, D6 proposes the substitution of Si_3N_4 with silicon oxynitride (SiO_xN_y).

The board observes that D6 does not specify which kind of "mechanical stress" is supposed to be overcome by said substitution. D6 also does not disclose any experimental data which might suggest that a parallel can be drawn between the "mechanical stress" in question and the mechanical **durability** at issue in the contested patent. Furthermore, the design of the stack is different from the one in claim 1 at issue: D6 makes use of a four-layered stack without silver, while the contested patent requires a six-layered stack with silver.

It follows that the skilled person seeking an alternative six-layered stack to the one disclosed in D1 would not find any hint in D6 of how this problem could be solved, and even if he had the idea of substituting Si_3N_4 with SiO_xN_y he would substitute both Si_3N_4 layers in the multilayered coating known from D1 and not only the one located between the transparent dielectric material and the first layer of nickel or nichrome, as in claim 1 at issue.

10.4.4 D7 (claim 1) discloses a coated article comprising a substrate, a coating on said substrate, and a

protective overcoating comprising an amorphous layer of reaction products formed by sputtering a target of an alloy comprising aluminum and silicon in a reactive gas.

In the particular embodiments defined in claims 2 to 12, the coating is defined as comprising a dielectric layer made in particular of zinc oxide, a metal layer comprising in particular silver, and the alloy of the overcoating as containing 6 to 95% silicon, in particular 6 to 18% silicon and most particularly 88% aluminum and 12% silicon.

In the particular embodiments defined at page 4, lines 18 to 29 and page 7, lines 46 to 55, the overcoating is defined as being made of (88% Al, 12% Si) oxynitride; in the other embodiments it is made of oxides or nitrides.

The above glass coatings have been subjected to corrosion and hardness/durability tests, the results of which have been summarised in Table 5. Among the samples tested, the samples 113 and 72-2, which bear the coating sequences

glass/ZnO/silver/ZnO/(88Al,12Si)O_xN_y

glass/ZnO/silver/ZnO/(72Al,28Si)O_xN_y,

are among those having the best durability.

The board agrees that the skilled person seeking a coated glass article having a mechanical durability equivalent to that of the coated glass known from document D1 would probably follow the above teaching

and would therefore try an overcoat made of the above oxynitrides in order to achieve a high mechanical durability.

However, if he were to do so he would not arrive at the subject-matter of claim 1 at issue because in document D7 the oxynitride is located in the **overlayer**, whereas in claim 1 it is in the interlayer between the dielectric material and the first nickel or nichrome layer. Furthermore, in the subject-matter of claim 1 the oxynitride is defined as being a silicon oxynitride, not a **mixed** silicon-**aluminum** oxynitride as in document D7.

10.4.5 The board is satisfied that the remaining documents cited during the opposition proceedings do not contain any information which would point towards the claimed solution of the problem stated above.

10.5 In view of the above, the board judges that having regard to the state of the art, the subject-matter of claim 1 at issue was not obvious to a person skilled in the art. It follows that claim 1 at issue involves an inventive step within the meaning of Articles 52(1) and 56 EPC.

Claims 2 to 6 derive their patentability from claim 1 on which they depend. Claim 7, which is directed to a method of making a surface-coated glass article defined in the same way as in claim 1 at issue, derives its patentability from that of claim 1. The same remark applies to claims 8 to 12, which are dependent on claim 7.

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 with the order to maintain the patent on the basis of claims 1 to 12 of the sixth auxiliary request submitted with letter dated 9 January 2009, and a description to be adapted if appropriate.

The Registrar: The Chairman:

C. Vodz G. Raths