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**Datasheet for the decision
of 10 November 2017**

Case Number: T 0667/12 - 3.3.05

Application Number: 07015354.9

Publication Number: 1903013

IPC: C03C17/36

Language of the proceedings: EN

Title of invention:
Low-E matchable coated articles

Applicant:
Guardian Glass, LLC.

Headword:
Coated glass/GUARDIAN

Relevant legal provisions:
EPC Art. 84, 123(2)

Keyword:
Claims (main and first to third auxiliary request) - clarity
(no)
Amendments (fourth to sixth auxiliary request) - extends
beyond the application as filed (yes)

Decisions cited:

Catchword:



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Case Number: T 0667/12 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 10 November 2017

Appellant: Guardian Glass, LLC
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 24 November
2011 refusing European patent application No.
07015354.9 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman E. Bendl
Members: J.-M. Schwaller
O. Loizou

Summary of Facts and Submissions

- I. This appeal lies from the decision of the examining division to refuse European patent application No. 07 015 354.9 on the grounds that the claims then on file did not meet the requirements of Articles 123(2), 76, 83, 84 and 56 EPC.
- II. With its statement of grounds of appeal dated 28 February 2012, the applicant (hereinafter: appellant) contested the decision and filed four amended sets of claims as main and first to third auxiliary requests.

Claim 1 of the main request reads (highlighting added by the board):

*"A coated article including a layer system supported by a substrate, the coated article comprising:
a first dielectric layer on said substrate;
an IR reflecting layer sandwiched between first and second barrier layers, each of said IR reflecting layer and said barrier layers overlying said first dielectric layer;
a second dielectric layer overlying each of said first dielectric layer, said barrier layers and said IR reflecting layer; and
wherein at least one of said barrier layers comprises a metal nitride of NiCrN_x that is nitrided to an extent so that the coated article has a ΔE^* value (glass side) no greater than 3.5 after or due to heat treatment (HT)."*

Independent claims 1 of auxiliary requests 1 to 3 correspond to claim 1 of the main request: they contain the highlighted feature; they limit the amount of

nitridation of the at least one barrier layer to "not more than 75%" (auxiliary requests 1 to 3); and they add the feature "*wherein the IR reflecting layer is in contact with the first and second metal inclusive barrier layers, which barrier layers are metal inclusive barrier layers*" (auxiliary requests 2 and 3).

III. In a communication the board expressed its preliminary opinion that the proposed sets of claims *inter alia* appeared to infringe the requirements of Article 84 EPC because the above feature containing the expression "*after or due to heat treatment (HT)*" was unclear.

IV. With letter dated 12 July 2017 the appellant filed a set of observations accompanied by three further sets of amended claims as auxiliary requests 4 to 6, with claim 1 of auxiliary request 4 reading:

"1. A coated article including a layer system supported by a glass substrate, the coated article comprising: a first dielectric layer on said substrate; an IR reflecting layer sandwiched between first and second barrier layers, each of said IR reflecting layer and said barrier layers overlying said first dielectric layer; a second dielectric layer overlying each of said first dielectric layer, said barrier layers and said IR reflecting layer; and wherein the bottom layer of said barrier layers comprises a metal nitride of NiCrN_x that is nitrided to an extent so that the coated article has a glass side ΔE^ value no greater than 3.5 after or due to heat treatment, HT, **wherein said bottom layer of said barrier layers is not more than 75% nitrided, wherein the top layer of said barrier layers is a substantially metallic barrier layer sputtered without nitrogen flow,***

and wherein the IR reflecting layer is in contact with the first and second barrier layers, wherein heat treatment means heating the coated article to a temperature of at least 550 degrees C for a sufficient period to enable tempering or heat bending."
(differences to the main request emphasised by the board).

Claim 1 of auxiliary requests 5 and 6 both correspond to above claim 1, differing only in that they specify that the bottom barrier layer is not more than **50%** nitrided, and the top barrier layer **comprises NiCr** (auxiliary request 5) or **is a substantially metallic NiCr layer** (auxiliary request 6).

- V. At the oral proceedings the conformity of the claimed subject-matter with the requirements of Articles 84 and 123(2) EPC was discussed. The appellant argued *inter alia* that the term "heat treatment" mentioned in claim 1 implied specific characteristics and that all the features of the amended sets of claims could be found in the application as originally filed.
- VI. After closure of the debate, the chairman established that the appellant's final requests were to set aside the decision under appeal and to grant a patent on the basis of the set of claims according to the main request or, in the alternative, according to one of the first to third auxiliary requests as filed with the statement of grounds of appeal or, in the further alternative, according to one of the fourth to sixth auxiliary requests as filed with letter dated 12 July 2017.

Reasons for the Decision

1. Main request - Article 84 EPC
- 1.1 As regards the feature "*wherein at least one of said barrier layers comprises a metal nitride of NiCrN_x that is nitrided to an extent so that the coated article has a ΔE^* value (glass side) no greater than 3.5 after or due to heat treatment (HT)*" in claim 1 of this request, the question arises as to whether the expression "**after or due to heat treatment**" is sufficiently clear in the currently claimed context, i.e. without further specifying the conditions under which such treatment is to be carried out.
- 1.2 The board in this respect concurs with the appellant's argument that in the field of glass manufacture "heat treatment" may imply treatments such as tempering, bending and/or heat strengthening, as set out in paragraphs [0026] and [0054] of the published description, and that said feature is normally not understood by the skilled person in this field as referring to heating the glass to a temperature merely slightly above room temperature.
- 1.3 It is also true, as argued by the appellant, that said expression is more clearly described in the description underlying the current application. For instance, in paragraph [0054] it is described as meaning that the coated article is heated to a temperature of "*at least about 1100°F (e.g. from about 550°C to 900°C) for a period sufficient to enable tempering or heat bending*", and paragraph [0026] discloses that said heat-treatments "*often necessitate heating the coated substrate to temperatures of at least about 1100°F (593°C) and up to 1450°F (788°C)*".

- 1.4 The above passages of the description do not, however, restrict the claimed subject-matter to a temperature of 1100°F or more, or to a specific range of temperatures as disclosed in the above paragraphs, nor do they restrict the claimed subject-matter to a specific duration of heat treatment, because the broad wording of claim 1 leaves its subject-matter open to interpretation, and so it also includes not only temperatures lower than those defined in paragraphs [0026] and [0056] but also indefinite durations of treatment.
- 1.5 In this context, i.e. in the absence of clear limitation in claim 1 of the temperature and duration of said heat treatment, the skilled person is still left in doubt as to the meaning of the expression "heat treatment". Therefore the skilled person does not know what circumstances determine the ΔE^* value (glass side) and keep it from being no greater than 3.5.
- 1.6 Furthermore, claim 1 describes a final coated product merely defined by specified layers and the ΔE^* value as an upper limit. Since circumstances other than (adequate) nitriding may also lead to the same final result, i.e. the desired ΔE^* values (see for instance paragraph [0029] as published, referring to "*controlling nitrogen (N) flow ... and/or controlling the thickness(es) of layers 5 and/or 9*" (emphasis added)), it is not possible to establish whether at least one of the barrier layers is sufficiently nitrided so that the final coated article has the required ΔE^* value, or whether this value has been achieved by other means. In other words, given the unclear definition and the lack of further features defining the invention, no decision can be taken on whether a coated article meeting the requirements

regarding the layers and the ΔE^* value falls within the scope of claim 1.

1.7 Additionally, claim 1 refers to a coated article including a layer system supported by a substrate and mentions a ΔE^* value (glass side). From the wording of the claim it is not clear to the skilled reader whether the substrate necessarily needs to be glass or whether the glass has to be present in addition to a further substrate.

1.8 Therefore, given these considerations, claim 1 of this request is not allowable under Article 84 EPC.

2. Auxiliary requests 1 to 3 - Article 84 EPC

Since the respective claim 1 of these requests includes the same objectionable feature as claim 1 of the main request, it presents the same deficiencies, so the same reasoning as above applies, with the result that auxiliary requests 1 to 3 do not meet the requirements of Article 84 EPC either.

3. Auxiliary request 4 - allowability of the amendments

Compared to claim 1 of the main request, claim 1 of this request includes *inter alia* the amendment that the **"bottom layer of said barrier layers is not more than 75% nitrided, wherein the top layer of said barrier layers is a substantially metallic barrier layer sputtered without nitrogen flow, and wherein the IR reflecting layer is in contact with the first and second barrier layers"**.

3.1 The appellant argued that said amendment was allowable as it was directly and unambiguously derivable from the

combination of the first complete paragraph on page 28, which disclosed the barrier layers and their nitriding in a generic way, with the first paragraph on page 9 of the description as filed.

- 3.2 The board observes that the paragraph at page 9 discloses that "*in other embodiments one of the barrier layers may be partially nitrided while the other barrier layer is not (i.e. the other barrier layer includes a substantially metallic portion)*". It however does not disclose that the bottom layer is nitrided and the top barrier layer substantially metallic, let alone that the bottom layer is not more than 75% nitrided.

The passage at page 28 is more specific, as it discloses that "*in other embodiments of the invention the lower barrier layer 5 may be sputtered using N flow while the top layer 9 is not (i.e. the top barrier layer 9 may be metallic, e.g. NiCr, in certain embodiments)*"; however, this passage does not disclose that the bottom layer is not more than 75% nitrided.

Additionally both passages relate to specific embodiments (see the wording used "in other embodiments") and the board has doubts as to whether these embodiments were originally disclosed in combination with the other features of claim 1.

- 3.3 For the sake of completeness, the board notes that the feature "*that at least one of the barrier layers is not more than 75% nitrided*" is disclosed in the passages at page 29, lines 17 to 19; page 35, lines 18 and 19; page 37, lines 8 and 9; claims 5, 18 and 27). However, these passages relate to further embodiments and do not disclose that the bottom layer is the one which is

nitrided, or that the top barrier layer has to be substantially metallic.

In other passages of the application as filed, namely at page 33, line 3 and claim 8, other embodiments are described as containing a bottom barrier layer which is not more than 75% nitrided, but do so in combination with a ΔE^* value (glass side) no greater than 2.6 (not a value no greater than 3.5 as required by claim 1 at issue) and not in combination with a substantially metallic top barrier layer.

3.4 It follows from the above considerations that the amendment proposed in claim 1 of this request is at least not directly and unambiguously disclosed in the application as filed in combination with a ΔE^* value (glass side) no greater than 3.5, and so the subject-matter of claim 1 extends beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

4. Auxiliary requests 4 and 5 - allowability of the amendments

Claim 1 of this request differs from claim 1 of auxiliary request 3 above in that the bottom layer barrier is defined as being not more than **50%** nitrided (instead of 75%) and the top barrier layer is defined **as comprising NiCr, or being a substantially metallic NiCr layer.**

The board notes that the feature "*not more than 50% nitrided*" is disclosed systematically in the application as filed as a further narrowing of the feature "*not more than 75% nitrided*", and so it presents the same deficiencies as the latter feature,

since it is never directly and unambiguously disclosed in combination with all the other features of claim 1, and so, for similar reasons as those indicated above, this amendment extends beyond the content of the application as filed, contrary to Article 123(2) EPC.

5. As none of the sets of claims underlying the proposed requests meets the requirements of the EPC, the appeal cannot succeed and the decision of the department of first instance to reject the patent application is confirmed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



C. Vodz

E. Bendl

Decision electronically authenticated