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**Datasheet for the decision  
of 27 February 2014**

**Case Number:** T 2162/11 - 3.3.09

**Application Number:** 01122652.9

**Publication Number:** 1193048

**IPC:** B32B17/10, C03C27/12, B60J1/00

**Language of the proceedings:** EN

**Title of invention:**  
Laminated glass and automobile employing it

**Patent Proprietor:**  
Asahi Glass Company, Limited

**Opponent:**  
Pilkington Group Limited

**Headword:**

**Relevant legal provisions:**  
EPC Art. 56

**Keyword:**  
Inventive step - (yes)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern  
Boards of Appeal  
Chambres de recours**

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Case Number: T 2162/11 - 3.3.09

**D E C I S I O N  
of Technical Board of Appeal 3.3.09  
of 27 February 2014**

**Appellant:** Pilkington Group Limited  
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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
26 July 2011 concerning maintenance of the  
European Patent No. 1193048 in amended form.**

**Composition of the Board:**

**Chairman:** W. Sieber  
**Members:** M. O. Müller  
M.-B. Tardo-Dino

## Summary of Facts and Submissions

- I. This decision concerns the appeal by the opponent against the opposition division's interlocutory decision that European patent No. 1 193 048 as amended meets the requirements of the EPC.
- II. The opponent had requested revocation of the patent in its entirety on the grounds that the claimed subject-matter was neither novel nor inventive (Article 100(a) EPC).

The documents submitted during the opposition proceedings included:

- D1: US 5,620,799;
- D3: EP 0 727 306 A2;
- D6a: US 5,898,407;
- D6b: EP 0 760 537 A2; and
- D7: US 6,042,924.

- III. The opposition division's decision, which was announced orally on 28 June 2011 and issued in writing on 26 July 2011, was based on a main request filed with letter dated 7 September 2007 and a first auxiliary request filed as "third auxiliary request" with telefax dated 16 June 2011.

Claim 1 of the first auxiliary request reads as follows:

"1. A laminated glass comprising a plurality of glass sheets laminated one on another with an interliner provided between the respective adjacent glass sheets, characterized in that said laminated glass has at least a first region and a second region, as viewed from the front, at the second region, said laminated glass has an infrared transmittance higher than the infrared transmittance at the first region; and the visible light transmittance of said laminated glass at the second region is lower than the visible light transmittance of said laminated glass at the first region, wherein at the second region, said interliner has an infrared transmittance higher than the infrared transmittance at the first region, wherein at the first region, said interliner is made of an interliner material having infrared shielding fine particles incorporated and dispersed therein, and wherein at the second region, the interliner has a multi-layered structure, and at least one layer of the multi-layered structure is a layer containing substantially no infrared shielding fine particles."

Claims 2 to 9 are dependent on claim 1 and claim 10 refers to an automobile provided with *inter alia* the laminated glass as defined in any of claims 1 to 9.

IV. The opposition division's position can be summarised as follows:

The main request met the requirements of Article 123(2) EPC but lacked novelty in view of D6a.

The first auxiliary request met the requirements of Article 123(2) EPC and was also novel. Furthermore, the subject-matter of claim 1 of the first auxiliary request met the requirements of Article 56 EPC. D6a,

which formed the closest prior art, described a laminated glass for a car windscreen which comprised an interliner between two panes of glass. This laminated glass contained a first and second region as required by claim 1. Equally as required by this claim, the laminate in the second region had a higher infrared transmittance and a lower visible light transmittance than in the first region. The subject-matter of claim 1 differed from D6a in that, firstly, the interliner in the first region comprised infrared shielding fine particles dispersed therein and, secondly, in the second region the interliner had a multilayered structure and at least one layer thereof contained substantially no infrared shielding fine particles. The objective technical problem was the provision of a laminated glass which allowed the reduction of heat transmittance, while at the same time allowing infrared transmittance at wavelengths used for infrared communication devices. None of the documents cited by the opponent gave a hint to the solution claimed. D6a did not actually even relate to the problem of infrared communication, but rather to that of radio communication. The only document cited by the opponent which mentioned the use of shielding fine particles, namely D3, was also concerned with radio transmittance and not infrared transmittance. Even if one combined the teaching of D3 with D6a, such a combination would not result in a laminate with a multilayered structure of the interliner in the second region and there was no teaching in either of these documents regarding the objective technical problem, ie how to control infrared transmittance for a particular purpose.

V. On 4 October 2011, the opponent (hereinafter: "the appellant") filed an appeal and, on the same day, paid

- the prescribed fee. The statement setting out the grounds of appeal was filed on 5 December 2011.
- VI. By its letter of 13 June 2012, the proprietor (hereinafter: "the respondent") filed a reply to the grounds of appeal together with a main request (identical to the first auxiliary request found allowable by the opposition division; for claim 1 of this request, see point III above) and first to fifteenth auxiliary requests.
- VII. On 10 July 2013, the parties were summoned to oral proceedings. The summons contained the board's preliminary opinion on inventive step in view of D6a and D7 as potential closest prior art documents.
- VIII. With its letter of 8 January 2014, the respondent re-filed the claims of the main request, withdrew all previous auxiliary requests and filed new first to third auxiliary requests.
- IX. With letter of 27 January 2014, the appellant filed a reply.
- X. On 27 February 2014, oral proceedings were held before the board. The parties maintained their requests made during the written proceedings and did not file any new requests.

XI. So far as relevant for the present decision, the appellant's arguments can be summarised as follows:

- Inventive step of the main request in view of D6a as the closest prior art

The subject-matter of claim 1 lacked an inventive step over the closest prior art D6a. The glass laminate of figure 3 of this document contained a first and a second region. The first region was defined by a bonding foil 7b and a solar control coating 7 embedded into a plastic bonding layer 6. The second region corresponded to the slot region 8 in figure 3. This slot region contained the plastic bonding layer 6 and an opaque screen printed border 5.1. Due to the presence of this opaque screen printed border, this second region had a reduced visible light transmittance, as required by claim 1. Furthermore, since this second region did not contain the solar control coating, it had a higher infrared transmittance, equally as required by claim 1. In this respect, the respondent's argument that the screen printed border blocked infrared transmittance was unsound, since at least a portion of the infrared wavelength band could penetrate such a printed border. Furthermore, as an alternative to this opaque screen printed border, a colour wedge was disclosed in the description, which equally led to lower visible light transmittance and clearly did not block any infrared light. Also the claimed multilayered structure in the second region was present in figure 3. More specifically, even though the bonding foil 7b did not extend into the second region (slot region 8) in figure 3, in

practice it would do so, such that the second region contained two layers, namely the bonding foil 7b and the plastic bonding layer 6. This resulted from the fact that the best way to produce the laminated glass of figure 3 was to cut short only the solar control coating 7 rather than both the solar control coating 7 and the bonding foil 7b. This assumption was confirmed by the statement in column 5, lines 25 to 29 of D6a that the foil with the solar control coating could be cut shorter than the bonding foils. More specifically, the use of the plural form "bonding foils" in this passage implied that in the slot region more than one foil was present. Furthermore, this assumption was also in line with figure 3 in the European counterpart document D6b, where the foil that was equivalent to the first bonding foil 7b had the same signature (dots) as the plastic bonding layer 6. Consequently, the only distinguishing feature with regard to D6 was the presence of the solar control coating 7 instead of the infrared shielding fine particles as required by claim 1. The objective technical problem was the provision of an alternative laminated glass. This alternative was already known from D3, which disclosed that solar control properties could be achieved by infrared shielding fine particles. The skilled person starting from D6a would therefore replace the solar control coating 7 by the infrared shielding particles of D3 and would thereby arrive at the laminated glass of claim 1.



- Inventive step of the main request in view of D7 as the closest prior art.

D7 was the closest prior art since it mentioned solar control properties and permeability for electromagnetic radiation. The right-hand side of the glass laminate in figure 1 of D7 contained PVB films 5, 6 and 7 and embedded therein a PET substrate film 3 onto which a solar control layer 8 was coated. This corresponded to the first region in claim 1. On the left-hand side, the figure contained a recess area 4 that was equally composed of PVB films 5, 6 and 7 and additionally contained a PET film 9. This corresponded to the second region in claim 1. Since the recess area did not contain any solar control layer, its infrared transmittance was higher than that of the first region. Furthermore, it also had the claimed lower visible light transmittance. More specifically, it was disclosed in column 2, lines 55 to 67 of D7 that the area of recess could be masked by using a colour-wedge film or printed dot matrix, which both resulted in reduced visible light transmittance. Even though a printed layer might block infrared transmittance, this would not be true for a printed dot matrix, since infrared light could pass between the dots. Therefore, even if a printed dot matrix was present, infrared light transmittance in the second area (slot region 8) would still be higher than in the first region. Finally, since the second region contained three PVB films 5, 6 and 7 and the PET film 9, it had a multilayered structure as required by claim 1. Consequently, the subject-matter of claim 1 differed from D7 only by the presence of

infrared shielding fine particles. The objective technical problem was again the provision of an alternative laminated glass and the solution, namely the use of infrared shielding fine particles, was obvious in view of D3.

XII. So far as relevant for the present decision, the respondent's arguments can be summarised as follows:

- Inventive step of the main request over D6a as the closest prior art

It was debatable whether D6a constituted the closest prior art since it was not concerned with infrared data communication.

Furthermore, the subject-matter of claim 1 differed from figure 3 of D6a by various features. A first distinguishing feature was the presence of infrared shielding fine particles in the first region. A second distinguishing feature was the requirement in claim 1 that the infrared transmittance of the laminated glass in the second region be higher than in the first region. More specifically, the laminated glass of figure 3 contained in this region a printed border which was usually black enamel and this blocked infrared light completely. A third distinguishing feature was the requirement of claim 1 that at least one layer in the interliner, including that of the second region, contain infrared shielding fine particles while no such particles were present in slot region 8. A fourth distinguishing feature was that according to claim 1, the interliner in the first region had to be made of a single layer while that in D6a contained three different

layers, namely the plastic bonding layer 6, the solar control coating 7 and the bonding foil 7b. A fifth distinguishing feature was that according to claim 1 the interliner in the second region had to have a multilayered structure while the interliner in slot region 8 of figure 3 was composed of one layer only. It was important in this respect that the opaque screen printed border in slot region 8 was not part of the interliner. Firstly, the feature "interliner" in claim 1 implied a material that bonded the glass panes together while the opaque screen printed border 5.1, which typically was black enamel, did not have this function. Secondly, the opaque screen printed border 5.1, also in terms of structure, did not belong to the interliner but to the glass pane 5. This was confirmed by D1 which disclosed that the printed screen border was baked onto the glass rather than the interliner. Also the appellant's argument that the bonding foil 7b extended into the slot region and thereby, together with the plastic bonding layer 6, formed a multilayered structure, was not correct. More specifically, it was clearly visible in figure 3 that this bonding foil did not extend into slot region 8 and furthermore it was stated in the description of D6a that both the solar control coating 7 and the bonding foil 7b, rather than this bonding foil only, were cut at the edge.

In view of the fact that the subject-matter of claim 1 thus differed in terms of five features from the disclosure of D6a, and since D3 disclosed only one of those features, the skilled person would not arrive at the claimed subject-matter even if he combined D6a with D3.

- Inventive step of the main request in view of D7 as the closest prior art

D7 could not constitute the closest prior art since the gist of this document was to prevent faults in optical transmission in the area of recess, which was entirely different from the objective of the opposed patent. Irrespective of that, the claimed subject-matter differed by various features from D7. In particular, D7 did not disclose the feature of claim 1 that at the first region the interliner was made of a material having infrared shielding fine particles. Furthermore, neither figure 1 nor figure 2 of D7 disclosed the further feature of claim 1 that the visible light transmittance of the second region (area of recess 4) was lower than that of the first region. As regards the passage in the description cited by the appellant, this referred to optional embodiments only and the materials referred to in this passage, such as a colour wedge, were not present in figure 1. So starting from D7 and trying to find an alternative glass laminate, the skilled person had to make various choices, namely firstly to apply a colour wedge in the area of recess, secondly to use a solar control coating as functional film 8 and thirdly to replace this by the infrared shielding fine particles of D3. In view of the need for this multiple selection, the combination of documents D7 and D3 could not render the claimed alternative obvious. As regards the appellant's argument that no choice was needed with respect to the functional film 8 (solar control or low E-layer), this was not true. More specifically, if the skilled person were to select the low E-layer

disclosed as an alternative embodiment of this film 8 he would not replace it later on by the infrared shielding fine particles of D3, since low E-layers had various additional functional properties which would be lost upon replacement by infrared shielding fine particles. Therefore, even if D7 were to be selected as the closest prior art, the claimed subject-matter would be inventive.

XIII. During the oral proceedings, the board made the following additional observation:

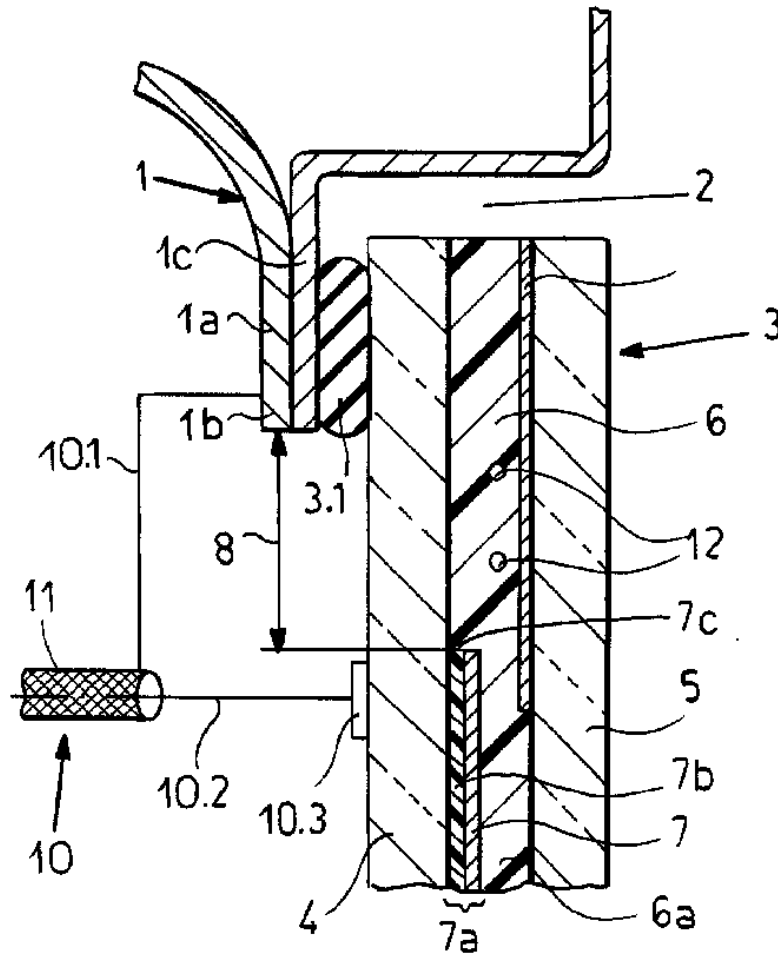
The passage referred to by the appellant with respect to the application of a masking layer in the area of recess in D7 disclosed as a second option the application of a printed layer. The application of such a printed layer could result in a lower infrared transmittance contrary to the higher infrared transmittance, as required by claim 1 for the second area. Therefore, a choice was needed in order to obtain at the same time a lower visible light transmittance and a higher infrared transmittance in this area of recess.

XIV. The appellant requested that the decision under appeal be set aside and that European patent No. 1 193 048 be revoked.

XV. The respondent requested that the appeal be dismissed, or in the alternative that the patent be maintained on the basis of the first to third auxiliary requests submitted with the letter of 8 January 2014.

## **Reasons for the Decision**

1. The appeal is admissible.
2. Main request - Inventive step
  - 2.1 The appellant's only attack against the claims of the main request was based on lack of inventive step in view of either D6a or D7 as the closest prior art.
  - 2.2 The invention concerns laminated glass which shields the interior of automobiles from infrared light, thereby avoiding a temperature increase in the automobile's interior, and at the same time permits permeation of infrared light having a wavelength useful for infrared data communication (column 2, lines 32 to 38).
  - 2.3 In a similar way, D6a refers to a laminated glass having good solar control characteristics while exhibiting at the same time improved transmission and reception of electromagnetic waves over a broad waveband (column 2, lines 22 to 35). In line with the submissions of the appellant, D6a can therefore be considered to represent the closest prior art.
  - 2.4 The laminated glass of figure 3 of D6a has the following structure (it was common ground between the parties that the reference number missing in figure 3 at the line between reference numbers "2" and "3" must be "5.1", see also column 7, lines 44 to 46):



2.4.1 As acknowledged by both parties, the following features of claim 1 are disclosed in figure 3:

- a plurality of glass sheets (inner glass pane 4 and outer glass pane 5) laminated one on another with an interliner (plastic bonding layer 6 and 6a) provided between the respective adjacent glass sheets;
- with the laminated glass having a first region (lower part of figure 3 with plastic bonding layer 6a and foil 7a, the latter being composed of a solar control coating 7 and a bonding foil 7b);

- a second region (slot region 8 where the foil 7a is cut short and which is consequently composed of the plastic bonding layer 6 without solar control coating 7 and bonding foil 7b);
- with at least one layer in the second region (slot region 8) not containing any infrared shielding fine particles; and
- with the laminated glass in the second region having a lower visible light transmittance than that in the first region (because screen printed border 5.1 in slot region 8 is opaque, it reduces the visible light transmittance).

2.4.2 Claim 1 requires the interliner at the second region to have a multilayered structure. The second region (slot area 8) of figure 3 contains an opaque screen printed border 5.1 apart from plastic bonding layer 6. The question therefore arose during the appeal proceedings whether the plastic bonding layer 6 and the opaque screen printed border 5.1 in slot region 8 of figure 3 both constitute layers belonging to the interliner such that the interliner has a multilayered structure as required by claim 1.

In this respect, the respondent argued that, firstly, the feature "interliner" in claim 1 implied a material that bonds the glass panes together while the opaque screen printed border 5.1, which typically was black enamel, did not have this function. Secondly, the opaque screen printed border 5.1 in figure 3, also in terms of structure, did not belong to the interliner but to the glass pane 5.



According to claim 1, the glass sheets are "laminated one on another with an interliner provided between the respective adjacent glass sheets". The interliner is thus indeed defined in claim 1 by its function, namely to laminate, ie glue the glass sheets together. It appears credible to the board that an opaque screen printed border, such as black enamel, does not have this function.

Furthermore, it also seems credible that the opaque screen printed border 5.1 does not form part of the interliner (plastic bonding sheet 6) in figure 3. More specifically, according to column 7, lines 44 to 46 of D6a the opaque screen printed border 5.1 is provided at the edge of the outer glass pane 5 rather than at the edge of plastic bonding layer 6. That the printed border forms part of the glass pane is further confirmed by column 3, line 65 to column 4, line 3 of D1, according to which an opaque screen printed border (an opaque coating of enamel) is "baked onto the glass".

In view of this, the board is convinced that indeed, the opaque screen printed border 5.1 in figure 3 does not form part of the interliner. In fact, this was not even disputed by the appellant. Therefore, the interliner in slot region 8 of figure 3 can be considered to be composed of one single layer, namely the plastic bonding layer 6.

The appellant argued however that although the bonding foil 7b did not extend into the second region (slot region 8) in figure 3, it would do so in practice such that the second region contained two layers, namely the bonding foil 7b ("extended") and the plastic bonding layer 6. This resulted from the fact that the best way

to produce the laminated glass of figure 3 was to cut short only the solar control coating 7 rather than both the solar control coating 7 and the bonding foil 7b. This assumption was confirmed in the appellant's opinion by the statement in column 5, lines 25 to 29 of D6a that the foil with the solar control coating could be cut shorter than the bonding foils. More specifically, the use of the plural form "bonding foils" in this passage implied that in the slot region more than one foil was present. Furthermore, this assumption was also in line with figure 3 in the European counterpart document D6b where the foil equivalent to the bonding foil 7b had the same signature (dots) as the plastic bonding layer 6. This signature in the second region thus represented both a bonding foil 7b and a plastic bonding layer 6.

In the board's view, this argument is not convincing. Firstly, the fact that there may be a best way to produce the laminate of figure 3 which results in an arrangement where the bonding foil 7b extends into the slot region does not exclude other ways of production that lead to a bonding foil 7b not extending to the slot region. Secondly, the appellant's way of interpreting D6a contradicts the arrangement explicitly shown in figure 3, where the bonding foil 7b does NOT extend into the slot region, and furthermore is also in clear contradiction to the explicit statement in column 8, lines 35 to 36 of D6a that foil 7a, which is composed of the bonding foil 7b and the solar control coating 7, is cut short at an edge to define the slot region 8. Finally, figure 3 of D6b, which was referred to by the appellant, does not contain any bonding foil 7b, let alone a bonding foil that extends into the slot region 8.

The feature of claim 1 that at the second region the interliner has a multilayered structure is thus a first distinguishing feature.

2.4.3 Claim 1 requires the infrared transmittance of the laminated glass at the second region to be higher than that of the laminated glass at the first region. In this respect, it was a matter of dispute between the parties whether the opaque screen printed border 5.1 in the second region of figure 3 (slot region 8) had a higher infrared transmittance than the solar control coating 7 and the bonding foil 7b in the first region.

Neither the infrared transmittance nor the type of material of the opaque screen printed border 5.1 is disclosed in D6a. D6a therefore leaves the skilled reader in doubt as to whether the infrared transmittance in slot region 8, in particular that of the opaque screen printed border 5.1, is higher than that of the solar control coating and bonding foil 7 and 7b in the first region.

The appellant in this respect argued that even if, as asserted by the respondent, the opaque screen printed border 5.1 were black enamel, this would still transmit a certain portion of the infrared waveband, such that, at least for this portion, infrared transmittance in the second region would be higher than in the first region. However, since this assertion has not been substantiated by any evidence, it must be disregarded.

It can thus not be clearly and unambiguously derived from D6a that the infrared transmittance in the second region (slot region 8) is higher than in the first region. This higher infrared transmittance is thus a second distinguishing feature.

- 2.4.4 Claim 1 requires the interliner at the first region to be made of an interliner material having infrared shielding fine particles incorporated and dispersed therein. As acknowledged by both parties, this feature is not disclosed in figure 3 of D6a and thus constitutes a third distinguishing feature.
- 2.4.5 The respondent argued that an additional distinguishing feature was present, since claim 1 required infrared shielding fine particles also to be present in the interliner contained in the second region while no such particles were present in slot region 8 of figure 3 of D6a. In the board's view, however, this way of interpreting claim 1 is not correct. Firstly, the presence of infrared shielding fine particles in the interliner material is required by claim 1 only for the first region ("wherein **at the first region**, said interliner is made of an interliner material having infrared shielding fine particles incorporated and dispersed therein" (emphasis added by the board)). Secondly, the wording of claim 1 "wherein at the second region, ... **at least one** layer of the multi-layered structure is a layer containing substantially no infrared shielding fine particles" (emphasis added) covers embodiments wherein all layers of the interliner in the second region are devoid of infrared shielding fine particles.

In the respondent's view, a further distinguishing feature was present, since the interliner in the first region had to be made of a single layer according to claim 1 while that in D6a contained three different layers, namely the plastic bonding layer 6, the solar control coating 7 and the first bonding foil 7b. However, claim 1 nowhere requires the presence of only

one interliner layer in the first region. Also the feature in claim 1 that at the first region the interliner is made of an interliner material having infrared shielding fine particles incorporated and dispersed therein does not in any way specify the number of interliner layers present.

The two further features regarded by the respondent as distinguishing therefore in fact do not distinguish the claimed subject-matter from that of figure 3 of D6a.

2.4.6 Consequently, the laminated glass of claim 1 differs from that of figure 3 firstly in that the interliner in the second region has a multilayered structure, secondly in that the infrared light transmittance of the laminated glass in the second region is higher than that of the laminated glass in the first region, and thirdly in that the interliner in the first region is made of an interliner material having infrared shielding fine particles incorporated and dispersed therein.

2.5 According to the appellant, the objective technical problem was the provision of an alternative laminated glass. For the sake of argument, the board will use this problem in its inventive step analysis.

2.6 As a solution to this problem, the patent in suit proposes a laminated glass according to claim 1 characterised in that the interliner in the second region has a multilayered structure, in that the infrared light transmittance of the laminated glass in the second region is higher than that of the laminated glass in the first region, and lastly in that the interliner in the first region is made of an interliner

material having infrared shielding fine particles incorporated and dispersed therein.

- 2.7 As not disputed by the parties, it is credible that this problem is indeed solved by the claimed subject-matter.
- 2.8 The appellant argued that this solution was obvious in view of D3. More specifically, it was already known from D3 that a solar control function could be achieved by means of infrared shielding fine particles.

D3 refers to a laminated glass containing a first and second transparent glass plate and an interlayer film interposed between these glass plates with this interlayer film containing functional ultrafine particles dispersed therein (column 2, lines 13 to 20). These particles have various functions, such as heat insulation to maintain the solar radiation transmittance within a range of up to 65% (column 3, lines 48 to 51). In view of this teaching, the skilled person looking for alternative laminated glasses may indeed have replaced the solar control coating 7 in figure 3 of D6a by the ultrafine particles of D3.

However, D3 neither teaches using a multilayered structure for the interliner in slot region 8 of D6a, nor suggests choosing an opaque screen printed border which, apart from leading to a lower visible light transmittance, results in a higher infrared transmittance in the second region (slot region 8).

Therefore, even if the skilled person started from the least ambitious problem possible, namely the provision of an alternative laminated glass, and even if the skilled person replaced the solar control coating 7 in

D6a by the ultrafine particles of D3, he would still not arrive at the claimed laminated glass, namely one having an interliner with a multilayered structure and a higher infrared transmittance in the second region. Therefore the laminated glass of claim 1 is a non-obvious alternative over D6a in combination with D3.

The appellant argued in this respect that D6a disclosed, as an alternative to the opaque screen printed border, a standard colour wedge such as a grey or green wedge (column 5, lines 18 to 20). By choosing such a colour wedge, the infrared transmittance in the second region would be higher than that in the first region since a colour wedge, unlike an opaque screen printed border, did not block infrared light. However, neither D6a nor D3 suggests applying such a colour wedge to a laminated glass in which, in the first region, the solar control coating has been replaced by infrared shielding fine particles. Furthermore, even if the skilled person applied a colour wedge in the second region and also replaced the solar control coating in the first region by the infrared shielding fine particles of D3, he might still not arrive at the claimed laminated glass since **the interliner** in the second region (slot region 8) would not necessarily have the claimed multilayered structure.

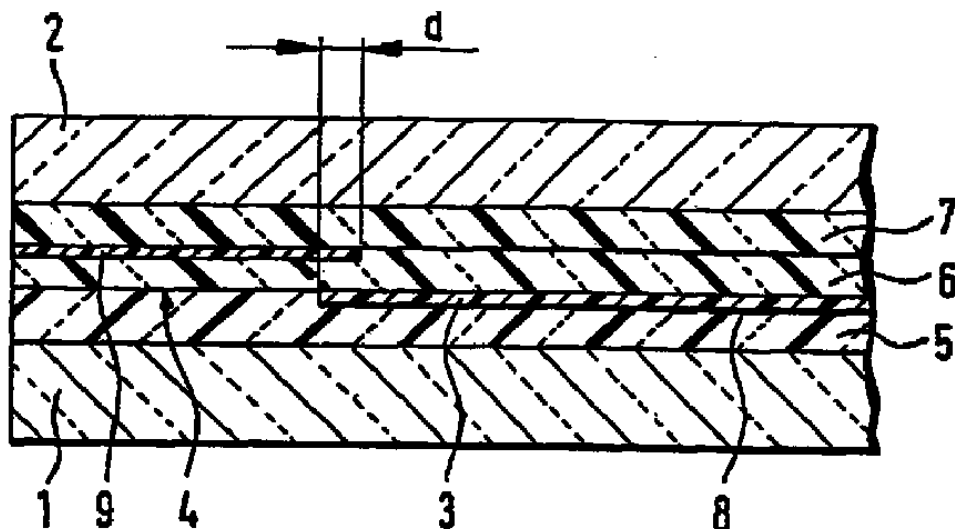
2.9 Consequently, the appellant's first inventive step attack based on D6a as the closest prior art must fail.

2.10 The appellant attacked inventive step also starting from D7 as the closest prior art.

The board acknowledges that this document is in the same field as the opposed patent, namely laminated glass, and mentions solar control properties (column 3,

lines 32 to 35) and the possibility of having an area in the laminated glass with permeability for electromagnetic radiation (column 4, lines 39 to 41). However, the focus of D7 lies in an entirely different area, namely the provision of a laminated glass with less optical distortion (column 2, lines 10 to 13: "The invention is based on the technical problem of improving generic laminated glass panes such that optical distortion, such as for example lens effects, are to a large extent prevented in the area of the edge of the recess."). It is therefore at least debatable whether D7 can be considered to represent the closest prior art. However, as will be shown hereinafter, even if, in the appellant's favour, one starts from this document as the closest prior art, an inventive step still has to be acknowledged.

2.10.1 The laminated glass pane of figure 1 of D7 has the following structure:



2.10.2 As acknowledged by both parties, the following features of claim 1 are disclosed in figure 1 (and equally in figure 2):



- a plurality of glass sheets (outer glass panes 1 and 2) laminated one on another with an interliner (PVB films 5, 6 and 7) provided between the respective adjacent glass sheets;
- with the laminated glass having a first region (right-hand part of figure 1 containing PVB films 5, 6 and 7 and, embedded therein, a functional film 3 consisting of a PET substrate film on top of which is located a functional film 8 being a solar control or low E-layer, based on silver layers and dielectric anti-reflective layers);
- a second region (area of recess 4, which, apart from the PVB films 5, 6 and 7, contains an uncoated auxiliary PET film 9);
- with at least one layer in the second region (area of recess) not containing any infrared shielding fine particles;
- with the laminated glass at the second region having a higher infrared transmittance than in the first region (since no solar control or low-E layer 8 is present in the area of recess); and
- at least one layer of the multilayered structure in the second region not containing any infrared shielding fine particles (none of the layers 5, 6, 7 and 9 in recess area 4 contains infrared shielding fine particles).

With regard to the last point, it is noted that, since the interliner is composed of four different layers 5,

6, 7 and 9 in the area of recess, it has a multilayered structure as required by claim 1.

2.10.3 As acknowledged by both parties, D7 does not however disclose the feature of claim 1 that at the first region the interliner is made of a material having infrared shielding fine particles incorporated and dispersed therein.

2.10.4 Furthermore, neither figure 1 nor figure 2 of D7 discloses the further feature of claim 1 that the visible light transmittance of the second region (area of recess 4) is lower than that of the first region.

The appellant argued in this respect that this feature was disclosed in column 2, lines 55 to 67 of D7. This passage reads as follows:

"It lies within the scope of the invention to mask the area of the recess and thus also the area of the edge of the recess visually, additionally to the arrangement of the auxiliary film according to the invention, by providing in the laminated glass pane an area of reduced light transmission at least partially overlapping the recess. This can be effected for example by using a color-wedge film for one of the laminating layers, the color wedge being arranged such that it overlaps the recess and tapers off on the other side of the edge of the recess, above or underneath the functional film. Another option consists of suitable arrangement of masking layers printed or otherwise applied to one of the glass panes, such as for example dot matrixes."

This passage thus discloses the optional application of an additional material in the area of recess and offers in this respect two options, namely the application of a colour wedge and the application of a printed masking layer (or other material), such as a dot matrix. The board acknowledges that no matter which of the two options is chosen for the additional material in recess area 4, this would lead to a reduced visible transmission as required by claim 1. However, in particular if the second option is chosen, ie if a printed masking layer such as a printed dot matrix is applied to the area of recess in figure 1, this may lead to a lower infrared transmittance in the second region, contrary to what is required by claim 1. The appellant argued in this respect that the above passage only disclosed printed dot matrixes as printed masking layers and that infrared light could penetrate through the area between the dots such that no reduced infrared transmittance would result. However, printed dot matrixes are only disclosed as an example of printed masking layers and even if this exemplified masking layer were to be chosen, it would depend on the area left open between the dots whether enough infrared light could penetrate it such that the claimed higher infrared transmittance was obtained. So, this second option, even if restricted to the example given for this option, allows for a lower infrared transmittance in the second region. This means that if the skilled person were to add an additional material, as disclosed in the above-discussed passage of the description of D7, to the recess area of figure 1, he might obtain the lower visible light transmittance as required by claim 1, but might at the same time lose the required higher infrared transmittance. Therefore, even taking the above-discussed passage of D7 into account, the combination of both a lower visible light transmittance

and a higher infrared transmittance in recess area 4 cannot be considered to be clearly and unambiguously derivable from D7.

2.11 As acknowledged by both parties, the problem underlying the patent in suit in the light of document D7 is to provide an alternative laminated glass.

2.12 As a solution to this problem, the patent in suit proposes a laminated glass according to claim 1, which is characterised in that the interliner material in the first region contains infrared shielding fine particles and in that in the second region the glass laminate has a higher infrared and a lower visible light transmittance than in the first region.

2.13 It was not disputed by the parties and it is credible to the board that this problem is indeed solved by the claimed subject-matter.

2.14 It remains to be examined whether the claimed solution is obvious in view of the cited prior art.

2.14.1 The appellant in this respect argued that the use of infrared shielding fine particles to obtain solar control properties was already known from D3 and that therefore the skilled person looking for an alternative would have applied these particles in the first region instead of the solar control layer 8. The subject-matter of claim 1 was therefore not inventive in view of D7 in combination with D3.

However, in order to arrive at the claimed laminated glass on the basis of this combination of documents D7 and D3 the skilled person needs to make several choices. Firstly, he has to depart from figure 1 or 2

of D7 by applying in the second region (area of recess) an additional material. Secondly, he has to choose as such an additional material, out of the materials disclosed in column 2, lines 55 to 67 of D7, a colour wedge film or a printed dot matrix with enough space between the dots. Thirdly, he has to choose a solar control layer as layer system 8 in the first region. Fourthly, he has to replace this solar control layer by an interliner containing infrared shielding fine particles as disclosed in D3. There is however neither in D7 nor in D3 any suggestion to make this multiple selection. The skilled person starting from D7 and confronted with the problem of finding an alternative laminated glass would therefore not have arrived at the claimed subject-matter. To argue that the skilled person would have made all these choices is therefore clearly based on hindsight.

2.14.2 The appellant argued that both the solar control layer and the low-E layer disclosed in D7 for the layer system 8 had low infrared transmittance, and hence no choice was needed in this respect. However, as acknowledged by the appellant, a low E-layer has more functionalities than just the reduction of infrared transmittance. These further functionalities would be lost by replacing such a low E-layer with a layer containing infrared shielding fine particles. Therefore, if the low E-layer disclosed in D7 were to be chosen by the skilled person, he would not replace it by the interliner containing infrared shielding fine particles as disclosed in D3. Hence, even taking the low-E layer of D7 into account, the skilled person would not arrive at the claimed laminated glass.

2.14.3 Therefore, inventive step of the subject-matter of claim 1, and by the same token of remaining claims 2

to 10, has to be acknowledged even if one starts from D7 as the closest prior art.

2.15 In the absence of any further inventive step attack from the appellant, it must be concluded that the subject-matter as claimed in the main request involves an inventive step.

## Order

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

The appeal is dismissed.

The Registrar:

The Chairman:



M. Cañueto Carbajo

W. Sieber

Decision electronically authenticated