Appeal decision

Appeal No. 2017-6211

Tokyo, Japan
Appellant ZEON CORPORATION

Patent Attorney SUGIMURA Kenji

Patent Attorney TSUKANAKA Tetsuo

The case of appeal against the examiner's decision of refusal for Japanese Patent Application No. 2015-542064, titled "LAMINATED GLASS" [International Publication on January 14, 2016 as WO2016/006610] has resulted in the following appeal decision:

Conclusion

The appeal of the case was groundless.

Reason

1 History of the procedures

The present application is an application with an international filing date of July 7, 2015 (claiming priority based on the Paris Convention with a Foreign Patent Office receipt dates of July 9, 2014 and February 26, 2015). The history of the procedures is set forth as below:

October 20, 2015	Notice of reason for refusal
January 26, 2016	Submission of written opinion
March 18, 2016	Notice of reason for refusal
July 11, 2016	Submission of written opinion and written amendment
July 29, 2016	Notice of reason for refusal
December 14, 2016	Submission of written opinion
January 23, 2017	Decision of Rejection
April 28, 2017	Submission of notice of appeal
August 1, 2017	Submission of written statement
December 1, 2017	Interview to the Appellant's representative

December 11, 2017 Notice of reason for refusal
February 13, 2018 Submission of written opinion and written amendment

2 The Invention

It is recognized that the invention according to Claim 1 of the present application (hereinafter referred to as "the Invention 1".) is specified by the matters recited in Claim 1 of the scope of claims amended on February 13, 2018 as below:

[Claim 1]

A laminated glass comprising, in the following order:
a first glass sheet;
a first interlayer film;
a transparent film laminated with a heat reflection film;
a second interlayer film; and
a second glass sheet, wherein

the first interlayer film and the second interlayer film are both formed of a modified hydrogenated block copolymer [E] (except for the ones including plasticizer),

the modified hydrogenated block copolymer [E] is a hydrogenated block copolymer [D] in which an alkoxysilyl group is incorporated, while 90% or more of all unsaturated bonds is hydrogenated,

the block copolymer [C] is composed of at least two polymer blocks [A] and at least one polymer block [B], the polymer blocks [A] each including a repeat unit derived from an aromatic vinyl compound as a main component, and the polymer block [B] including a repeat unit derived from a linear conjugated diene compound as a main component, and

a wA-to-wB ratio (wA:wB) is 30:70 to 60:40, where wA is a weight fraction of all the polymer blocks [A] of the block copolymer, and wB is a weight fraction of all the polymer blocks [B] of the block copolymer.

a. the transparent film laminated with the heat reflection film has a smaller area than the first and second glass sheets,

b. the transparent film laminated with the heat reflection film has a smaller area than the first and second interlayer films,

c. an entire perimeter edge of the transparent film laminated with the heat reflection film is set back 2 mm or more from an edge of the first and second glass sheets,

d. the entire perimeter edge of the transparent film laminated with the heat reflection film is set back 2 mm or more to 10 mm or less from an edge of the first and second interlayer films, and

e. the transparent film laminated with the heat reflection film is embedded by the first and second interlayer films.

3 Reasons for refusal by the body

One of the reasons for refusal notified by the body on December 11, 2017 is that the invention according to Claim 1 of the present application was easily conceivable by a person skilled in the art who had an ordinary knowledge in the field of art to which the invention belonged on the basis of the invention described in the following Cited Documents 1 to 2 that had been distributed in Japan or foreign countries or available to public via telecommunication line before a priority date and technical matters described in Cited Documents 3 and 4, and thus Appellant should not be granted a patent for the invention under the provision of Article 29(2) of the Patent Act.

Cited Document 1: International Publication No. WO 2009/087869

Cited Document 2: International Publication No. WO 2013/176258

Cited Document 3: Japanese Unexamined Patent Application Publication No. H6-144891

Cited Document 4: Japanese Unexamined Patent Application Publication No. 2000-86308

4 Cited Document (underlined by the body.)

(1) Description in Cited Document 1

A "[0001] The present invention relates in general to a laminated glass comprising a glass sheet, an interlayer, a transparent plastic film, another interlayer and another glass sheet which are laminated together in this order, and more particularly to the laminated glass for use as an automotive window glass.

Background of the Invention

[0002] A laminated glass comprising two interlayers having a plastic film, particularly, a Polyethylene Terephthalate film interposed therebetween and two glass sheets having the two interlayers interposed therebetween is known as a laminated glass that has a heat reflecting function."

B "[0019] For interlayers 11 and 12, it is preferable to use a hot melt-type adhesive such as Poly Vinyl Butyral (PVB), Ethylene Vinyl Acetate (EVA) or the like."

C "[0025] Accordingly, it is preferable to put a plastic film of an area smaller than that of a glass sheet in the plastic film-inserted laminated glass in such a manner that a distance d1 from each edge 2 of the plastic film-inserted glass to the corresponding edge 4 of the plastic film of Figure 3 is greater than or equal to 5 mm."

D "[0027] That is, as is seen from Fig. 3, it is preferable to make a distance d1 from an edge 2 of the plastic film-inserted laminated glass to an edge 4 of the plastic film smaller than a distance d2 from the edge 2 of the plastic film-inserted laminated glass to an edge 3 of the colored film."

E "[0028] Since the edges of the plastic film are put between the interlayer 11 and the other interlayer 12, the edges can exhibit a high resistance against a deterioration by moisture as compared with a structure in which the edges of the plastic film are exposed to the moisture like the edges of the plastic film-inserted laminated glass."

F "[0037] Example 1

A plastic film-inserted laminated glass for use as an automotive front window glass was produced by the following steps.

[0038] In order to produce an outdoor side glass sheet 10 and an indoor side glass sheet 13, two glass sheets were cut out, by a glass cutter, from a larger glass sheet in such a manner that the two glass sheets thus cut have predetermined shape and size matching with the size of a corresponding window, and then edge portions of the cut out glass sheets were subjected to a polishing process. After cleaning and drying the two glass sheets thus polished, the glass sheet that is to be placed at an outdoor side was applied at a mating surface thereof (the surface that is bonded by an interlayer) with a black ceramic paste through a screen printing and then dried.

[0039] The glass sheet to which the ceramic paste was applied through the screen printing and the other glass sheet were put on each other, and then these two glass sheets were simultaneously heated in a bending furnace to produce curved glass sheets which are used as an outdoor side glass sheet 10 and an indoor side glass sheet 13 respectively. Due to heating in the bending furnace, the ceramic paste applied to the glass sheet through the screen printing was baked (or fired), so that a colored film 15 was formed on the outdoor side glass sheet 10.

[0040] The width d2 of the colored film 15 was 30 mm at the minimum portion and 100 mm at the maximum portion.

[0041] A PET film of 100μm in thickness was prepared that is larger in size than the window and has both surfaces each being applied with an easy adhesive layer of Amorphous Polyester and a Silane coupling layer. A piece of a plastic film 14 was cut out from the PET film with a thickness of 100 μm by using a NC cutter, which is similar in shape to a flat-shaped outdoor side glass sheet 10 (viz., the glass sheet cut out for producing the outdoor side glass sheet 10) before the bending process so that it may have a size reduced by 1 cm in a central direction.

[0042] At the time of cutting out the plastic film 14, a technique was used by which a cut surface of the film has an inclination angle of 30 degrees relative to the plastic film surface, not a right angle relative to the plastic film surface.

[0043] Two PVB films were prepared each having a thickness of 0.36 mm. The above-mentioned plastic film 14 was sandwiched between these two PVB films.

[0044] Between the outdoor side glass sheet 10 and the indoor side glass sheet 13, there was inserted the two PVB films having the PET film put therebetween.

[0045] The insertion of the PVB film was so made that the edge 4 of the plastic film is placed away from the edge of the outdoor side glass sheet 10 by 10 mm.

[0046] After cutting the PVB film protruding from the mating edges of the outdoor side glass sheet 10 and indoor side glass sheet 13 that are put on each other, a space between the outdoor side glass sheet 10 and indoor side glass sheet 13 was subjected to a deaeration, and then a pressure and heat application process was carried out for producing the plastic film-inserted laminated glass 1.

[0047] The plastic film-inserted laminated glass thus produced did not show undesired wrinkles of the sandwiched PET film and prevented the edges 4 of the PET film from being viewed from the outside of the vehicle due to existence of the black colored film, and thus, the plastic film-inserted laminated glass thus produced was one suitably usable as a front window glass of a motor vehicle."

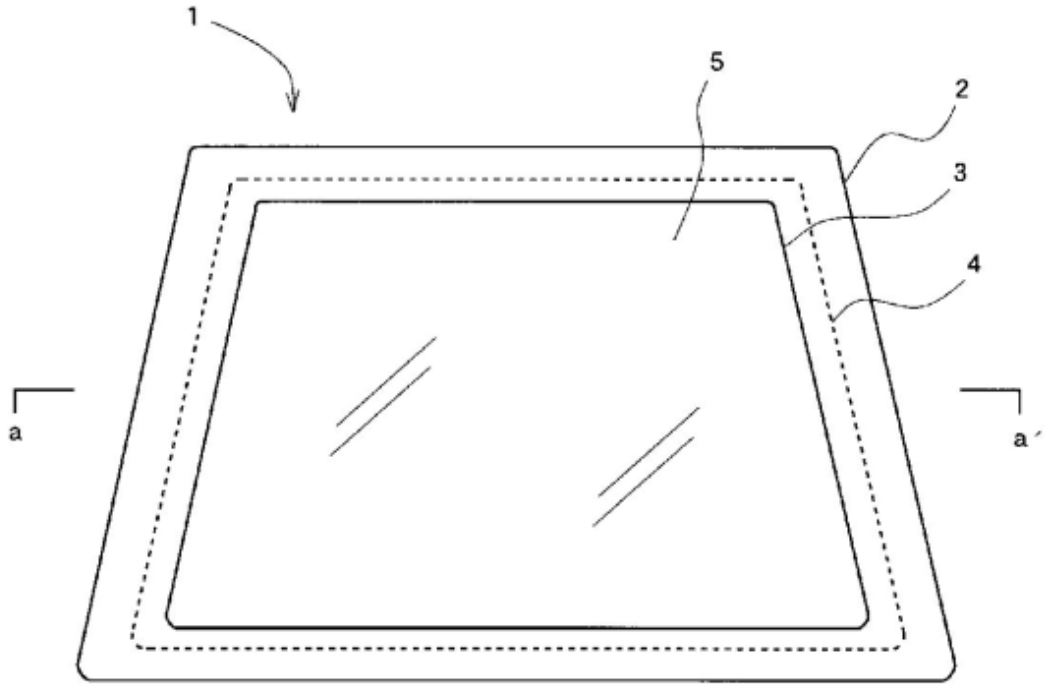
G "[0048] Example 2

An infrared reflecting film including a zinc oxide and silver was formed on one side of a PET film with a thickness of 50 μm. A plastic film-inserted laminated glass 1 was thus produced in a similar manner to Example 1, except that a plastic film 14 was cut out from the PET film with the infrared reflective film, which was larger than the edge 3 of the colored film formed on the outdoor side glass sheet 10 by 11 mm, i.e. d2-

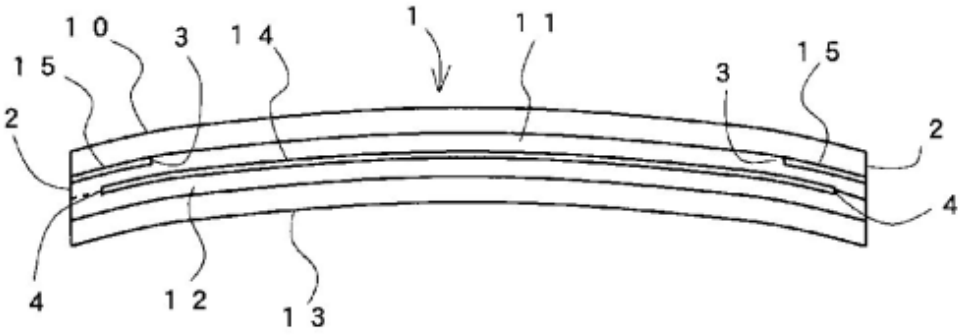
d1=11 mm, in a shape similar to a shape of a transparent portion (the transparent portion 5 of the plastic film-inserted laminated glass) of the outdoor side glass sheet 10.

[0049] The plastic film-inserted laminated glass thus produced had a heat shielding function that reflects near-infrared rays, did not show undesired wrinkles of the sandwiched PET film and prevented the edges 4 of the PET film from being viewed from the outside of the vehicle due to existence of the black colored film, and thus the plastic film-inserted laminated glass thus produced was one suitably usable as a front window glass of a motor vehicle."

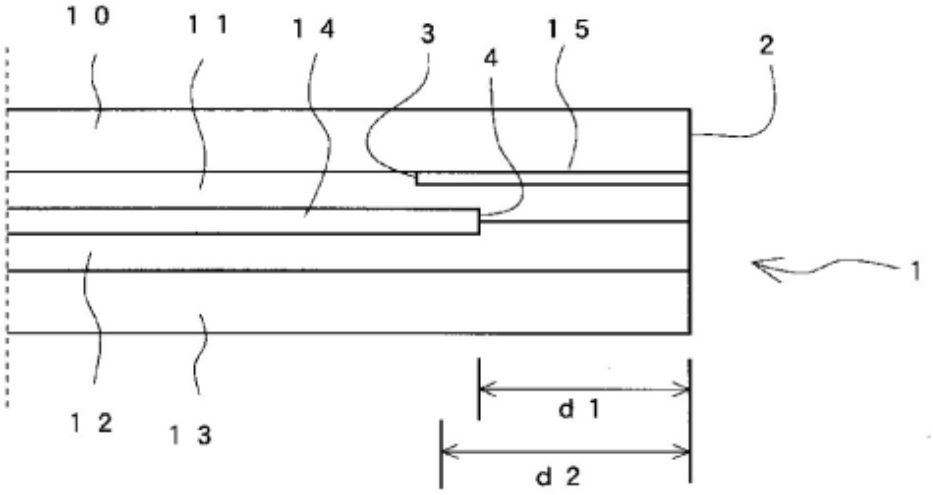
H [FIG. 1]



I [FIG. 2]



J [FIG. 3]



(2) The invention described in Cited Document 1

Cited Document 1 discloses "a laminated glass comprising a glass sheet, an interlayer, a transparent plastic film, another interlayer and another glass sheet which are laminated together in this order" (the above (1)A). The Example 2 (the above (1)G) discloses that the plastic film-inserted laminated glass 1 was produced in a similar manner to Example 1, except that a plastic film 14 was cut out from a PET film in which an infrared reflective film consisting of zinc oxide and silver was formed, which was larger than the edge 3 of the colored film formed on the outdoor side glass sheet 10 by 11 mm so that d2-d1=11 mm, i.e. in a shape similar to a shape of a transparent portion (the transparent portion 5 of the plastic film-inserted laminated glass) of the outdoor side glass sheet 10.

Further, it describes in Example 1 (the above (1)F) that a colored film 15 was formed on an outdoor side glass sheet 10 ([0039]), a width d2 of the colored film 15 is set to 30 mm at the minimum and 100 mm at the maximum ([0040]), and a plastic film 14 is sandwiched between two PVB films ([0043]).

In view of the description of the above (1)A, B, I, J, "two PVB films" used herein constitute an interlayer film (11) adjacent to an outdoor side glass sheet (10) and an interlayer film (12) adjacent to an indoor side glass sheet (13).

Further, d1 is a distance from an edge (2) of plastic-inserted laminated glass to an edge (4) of plastic film (the above (1)C, D). The width d2 of the colored film 15 is a distance from the edge of the plastic film-inserted laminated glass to an edge 3 of the colored film (the above (1)D). Thus a distance d1 of plastic-inserted laminated glass is d2-11 mm=19 to 89 mm. As described in the above (1)C, it can be said that a plastic film having a smaller area compared to that of glass sheet is inserted.

Consequently, Cited Document 1 discloses in Example 2

"a plastic-inserted laminated glass in which an outdoor side glass sheet (10) in which the colored film (15) is formed at an outdoor side, PVB interlayer film (11), a transparent plastic film (14) in which an infrared reflective film consisting of zinc oxide and silver was formed on one side of PET film, PVB film interlayer film (12) and an indoor side glass sheet (13) are laid in this order, wherein

supposing that a distance from an edge (2) of plastic-inserted laminated glass to an edge (4) of plastic film be d1,

d1=19 to 89 mm,

and wherein a plastic film (14) having a smaller area than those of the outdoor side glass sheet (10) and indoor side glass sheet (13) is inserted."

(hereinafter referred to as "cited invention 1".).

(3) Description in Cited Document 2

A "[0002] Laminated glass obtained by bonding multiple layers of glass through an interlayer film (e.g., resin film) has been known. Laminated glass exhibits excellent penetration resistance and thermal shock resistance, and has been widely used as automotive glass, security (safety) glass, and the like.

A polyvinyl butyral-based resin has been most generally used as a material for forming the interlayer of laminated glass. However, the polyvinyl butyral-based resin has problems in that (i) the glass sheet may be displaced, or air bubbles may occur after bonding due to heat since the polyvinyl butyral-based resin has a relatively low

softening point, and (ii) whitening may gradually occur from the peripheral area, and the adhesion to glass may decrease when the laminated glass is subjected to a high-humidity atmosphere for a long time since the polyvinyl butyral-based resin has high hygroscopicity. The polyvinyl butyral-based resin has another problem in that (iii) it is necessary to strictly control the water content before bonding the glass sheets in order to control the adhesion to glass (see Non-patent Document 1)."

B "[0011] Several aspects of the invention provide the following laminated glass (see (1) to (3)), and a method that includes using a hydrogenated block copolymer as an adhesive for laminated glass (see (4)).
(1) Laminated glass obtained by integrally bonding glass sheets through an adhesive, the adhesive including a hydrogenated block copolymer [3] obtained by introducing an alkoxysilyl group into a hydrogenated block copolymer [2] that is obtained by hydrogenating 90% or more of unsaturated bonds of a block copolymer [1] that includes at least two polymer blocks [A] and at least one polymer block [B], the polymer block [A] including a repeating unit derived from an aromatic vinyl compound as the main component, the polymer block [B] including a repeating unit derived from a linear conjugated diene compound as the main component, and the ratio (wA:wB) of the weight fraction wA of the polymer block [A] in the block copolymer [1] to the weight fraction wB of the polymer block [B] in the block copolymer [1] being 30:70 to 60:40."

C "[0013] (4) A method including using a hydrogenated block copolymer [3] as an adhesive for laminated glass, the hydrogenated block copolymer [3] being obtained by introducing an alkoxysilyl group into a hydrogenated block copolymer [2] that is obtained by hydrogenating 90% or more of unsaturated bonds of a block copolymer [1] that includes at least two polymer blocks [A] and at least one polymer block [B], the polymer block [A] including a repeating unit derived from an aromatic vinyl compound as the main component, the polymer block [B] including a repeating unit derived from a linear conjugated diene compound as the main component, and the ratio (wA:wB) of the weight fraction wA of the polymer block [A] in the block copolymer [1] to the weight fraction wB of the polymer block [B] in the block copolymer [1] being 30:70 to 60:40.

Effect of the Invention

[0014] Since the hydrogenated block copolymer [3] used in connection with the aspects of the invention includes the polymer block [A] that has a high glass transition temperature and exhibits excellent heat resistance, and the polymer block [B] that has a low glass transition temperature and exhibits excellent flexibility, the adhesive that

includes the hydrogenated block copolymer [3] exhibits excellent heat resistance, excellent low-temperature flexibility, low hygroscopicity, excellent transparency, low birefringence, excellent weatherability, and excellent adhesion to glass, a metal, and the like. ..."

D "[0076] (5) Adhesives

When bonding glass sheets using the adhesive, the adhesive is normally dissolved in a solvent to prepare a solution to be applied to the surface of the glass sheet, or molded (formed) in the shape of a sheet, for example."

E "[0078] The adhesive may be molded in the shape of a sheet using an arbitrary method. The adhesive may be molded in the shape of a sheet using a known melt extrusion molding method (e.g., cast molding method, extrusion sheet molding method, or inflation molding method), compression molding method, calendering molding method, or the like."

F "[0080] The thickness of the sheet formed of the adhesive is not particularly limited, but is preferably 0.1 to 10 mm. If the thickness of the sheet is less than 0.1 mm, the glass sheets may not be uniformly bonded. If the thickness of the sheet is more than 10 mm, the light transmittance of the sheet may decrease, or it may be necessary to use a large amount of the hydrogenated block copolymer [3] (i.e., it may be uneconomical)."

(4) Description in Cited Document 3

A "[0004] For many years, polyvinyl butyral resin film with a low degree of acetalization is used as an interlayer film of the above heat reflection laminated glass. The polyvinyl butyral resin film with a low degree of acetalization contains a number of hydroxyl groups in a molecule, and thus has a high hygroscopicity, which caused a problem to corrode a heat reflection film and impair the visible light transmittance."

(5) Description in Cited Document 4

A "[0024] So-called D/M/D layer systems (dielectric layer/metal layer/dielectric layer) which are deposited either on glass substrates, as e.g. and especially on car window glass directly or on a foil, mostly on a polyester foil, which latter is subsequently embedded into a composite glass. Thereby, the plastic foil provided with the coating is typically assembled to a composite glass via a polyvinylbutyral-PVB-foil.

As typical dielectric layer materials oxides of Zn, Ti, In etc. are used, as metal layer especially silver.

[0025] Thereby, it is known that silver is best suited to effectively separate light within the visible spectral range from light in the infrared spectral range. Due to its optical constants, namely refractive index n and extinction coefficient k, silver allows for a high transmission in the visible spectral range and for a high reflection in the near infrared spectral range. Attention is led thereabout on (1) H. A. Macleod, "Thin Film Optical Filter", Second Edition, Adam Hilger Ltd.; pp 292.

[0026] Equally known is nevertheless that silver is most sensitive to influences from the surrounding, as to humidity, formation of silver sulphide etc., and this irrespective whether such layer system is deposited on glass or on a plastic foil. ..."

5. Comparison

The Invention 1 and the cited invention 1 are compared with each other.

"The outdoor side glass sheet (10) in which a colored film (15) is formed at an outdoor side", "PVB interlayer film (11)", "transparent plastic film (14) in which an infrared reflective film consisting of zinc oxide and silver was formed on one side of PET film", "PVB film interlayer film (12)" and "outdoor side glass sheet (13)" of the cited invention 1 respectively correspond to "first glass sheet", "first interlayer film", "transparent film laminating a heat reflection film", "second interlayer film", and "second glass sheet" of the Invention 1.

Consequently, the two are common in that they are both

"laminated glasses comprising, in order:

a first glass sheet;

a first interlayer film;

a transparent film laminated with a heat reflection film;

a second interlayer film; and

a second glass sheet, wherein

a. the transparent film laminated with the heat reflection film has a smaller area than the first and second glass sheets,

c. an entire perimeter edge of the transparent film laminated with the heat reflection film is set back 2 mm or more from an edge of the first and second glass sheets."

but they are at least different from each other in the following features:

The different feature 1: regarding the first interlayer film and the second interlayer film, in the Invention 1, “both are formed of a modified hydrogenated block copolymer [E] (except for the ones including plasticizer),

the modified hydrogenated block copolymer [E] is a hydrogenated block copolymer [D] in which an alkoxysilyl group is incorporated, while 90% or more of all unsaturated bonds is hydrogenated,

the block copolymer [C] is composed of at least two polymer blocks [A] and at least one polymer block [B], the polymer blocks [A] each including a repeat unit derived from an aromatic vinyl compound as a main component, and the polymer block [B] including a repeat unit derived from a linear conjugated diene compound as a main component, and

a wA-to-wB ratio (wA:wB) is 30:70 to 60:40, where wA is a weight fraction of all the polymer blocks [A] of the block copolymer, and wB is a weight fraction of all the polymer blocks [B] of the block copolymer, whereas in Cited invention 1, they are "PVB films."

The different feature 2: In the Invention 1, "b. the transparent film laminated with the heat reflection film has a smaller area than the first and second interlayer films", "d. the entire perimeter edge of the transparent film laminated with the heat reflection film is set back 2 mm or more to 10 mm or less from an edge of the first and second interlayer films", and "e. the transparent film laminated with the heat reflection film is embedded by the first and second interlayer films", whereas

in Cited invention 1, there is no relationship between one of PVB interlayer films (11)(12) and a transparent plastic film (14) in which an infrared reflection film was formed.

6 Judgment

(1) Regarding the different feature 1

According to the above 4(3)A of Cited Document 2, Cited Document 2 discloses that the polyvinyl butyral resin conventionally used for a glass interlayer film has a defect of high hygroscopicity, whereas it can be seen from the above 4(3)B to F that "a hydrogenated block copolymer [3] obtained by introducing an alkoxysilyl group into a hydrogenated block copolymer [2] that is obtained by hydrogenating 90% or more of unsaturated bonds of a block copolymer [1] that includes at least two polymer blocks [A] and at least one polymer block [B], the polymer block [A] including a repeating unit derived from an aromatic vinyl compound as the main component, the polymer block

[B] including a repeating unit derived from a linear conjugated diene compound as the main component, and the ratio (wA:wB) of the weight fraction wA of the polymer block [A] in the block copolymer [1] to the weight fraction wB of the polymer block [B] in the block copolymer [1] being 30:70 to 60:40" with excellent low hygroscopicity is formed into a sheet and used for an interlayer film as an adhesive for laminated glass.

In this regard, "a block copolymer [1] including at least two polymer blocks [A] and at least one polymer block [B], the polymer block [A] including a repeating unit derived from an aromatic vinyl compound as the main component, the polymer block [B] including a repeating unit derived from a linear conjugated diene compound as the main component, and the ratio (wA:wB) of the weight fraction wA of the polymer block [A] in the block copolymer [1] to the weight fraction wB of the polymer block [B] in the block copolymer [1] being 30:70 to 60:40" corresponds to "block copolymer [C]" of the Invention 1.

Further, the "block copolymer [1]" of "a hydrogenated block copolymer [2] that is obtained by hydrogenating 90% or more of all the unsaturated bonds" corresponds to "hydrogenated block copolymer [D] in which 90% or more of all unsaturated bonds of block copolymer [C] is hydrogenated" of the Invention 1.

Still further, according to the description of Cited Document 2, the above interlayer film does not include a plasticizer, or it will not include a plasticizer in view of the common technical knowledge. Thus it can be said that the "hydrogenated block copolymer [3] obtained by introducing an alkoxysilyl group" into "a hydrogenated block copolymer [2]" constituting the above interlayer film corresponds to "a modified hydrogenated block copolymer [E]" of the Invention 1.

Consequently, as described in the above 4(1)E, one of the goals of the cited invention 1 is to prevent the deterioration due to moisture compared to a shape in which an edge of a plastic film is exposed to moisture as is similar to an edge of a plastic film-inserted laminated glass. It is obvious to a person skilled in the art that the moisture includes not only moisture directly exposed, but also moisture due to hygroscopicity of a PVB interlayer film, as described in the above 4(4)A of Cited Document 3. Thus a person skilled in the art could have easily conceived of replacing a PVB interlayer film used in the cited invention 1 with an interlayer film of Cited Document 2 having more excellent low hygroscopicity to ensure the prevention of deterioration due to moisture.

(2) Regarding the different feature 2

The plastic film-inserted glass of the cited invention 1 is obtained by "cutting the PVB film protruding from the mating edges of the outdoor side glass sheet 10 and indoor side glass sheet 13 that are put on each other" (the above 4(1)F, [0046]). Thus as depicted in the above 4(1)I and J, the edges of PVB interlayer films (11)(12) match with an edge of outdoor side glass sheet (10), an edge of indoor side glass sheet (13) and an edge (2) of plastic inserted laminated glass.

Consequently, the feature that "b. the transparent film laminated with the heat reflection film has a smaller area than the first and second interlayer films" of the Invention 1 is not a substantial different feature from the cited invention 1 as is similar to the fact that "a. the transparent film laminated with the heat reflection film has a smaller area compared to the first and second glass sheets".

Further, "the edge (4) of plastic film" of the cited invention 1 is described in the above 4(1)E, and covered with "PVB interlayer film (11)" and "PVB interlayer film (12)", as depicted in the above 4(1)I and J. In view of this, "a transparent plastic film (14) provided with an infrared reflective film" of the cited invention 1 is "embedded" into "PVB interlayer film (11)" and "PVB interlayer film (12)". Thus the feature of "e. the transparent film laminated with the heat reflection film is embedded by the first and second interlayer films" of the Invention 1 is not a substantial different feature from the cited invention 1.

In contrast, "d. the entire perimeter edge of the transparent film laminated with the heat reflection film is set back 2 mm or more to 10 mm or less from an edge of the first and second interlayer films" of the Invention 1 is different from cited invention 1 in which an edge (4) of the plastic film is apart from edges of PVB interlayer films (11)(12) with d1 of 19 to 89 mm, as similar to an edge (2) of plastic-inserted laminated glass. However, Cited Document 1 discloses in the above 4(1)C that this d1 is preferably 5 mm or more.

Consequently, it can be said as a modification within a scope of design matter, which is feasible as necessary by a person skilled in the art, to dispose an edge of a transparent plastic film (14) provided with an infrared reflection film apart from edges of PVB interlayer films (11)(12) with d1 of 5 mm to 10 mm in the cited invention 1.

Note that, it remains true even in a case where such a modification is made that an edge of a transparent plastic film (14) in which an infrared reflective film consisting of zinc oxide and silver was formed on one side of PET film is present at an outer side of an edge (3) of the colored film. The effect of the cited Invention 1 described in the above 4(1)G[0049] is not compromised.

(3) Regarding the effect

The Invention 1 has an effect of providing "a laminated glass with excellent heat reflection function and humidity resistance and durability" as described in [0012] of the specification of the present application.

In contrast, it can be seen from the description of the above 4(1)E of Cited Document 1 that the cited invention 1 also has an effect of preventing deterioration due to moisture compared to a shape where an edge of a plastic film is exposed to moisture.

Further, in a case of the cited invention 1 where silver is laid on one side of a PET film together with zinc oxide, it is obvious to a person skilled in the art that the "deterioration due to moisture" is construed as meaning the deterioration of silver having heat reflection function as described in the above 4(5)A of Cited Document 4.

Consequently, an interlayer film described in Cited Document 2 can be said as having more excellent low hygroscopicity compared to polyvinyl butyral resin. Thus a person skilled in the art could have expected that the use of this in the cited invention 1 would provide a laminated glass having more excellent humidity resistance and durability as well as no deterioration of silver, while maintaining heat reflection function, as described in the above 4(4)A of Cited Document 3.

Consequently, the above effects caused by the Invention 1 fall within a scope expected from the above description of Cited Documents 1 to 4, and cannot be said as particularly significant effects.

(4) Appellant's allegation

A Appellant alleges in the written opinion submitted on February 13, 2018 that "Further, in the reason for refusal, 'PVB interlayer films (11)(12)' are recognized as a PVB film free of plasticizer", and "in the reason for refusal, a consideration is given to the comparison and different feature between the Invention 1 and the cited invention 1, supposing that 'PVB interlayer films (11)(12)' be free of plasticizer".

However, even if the "plasticizer" to which a reference is not made in Cited Document 1 is not recognized in the finding of the cited invention 1, it does not mean that PVB film "free of plasticizer" is recognized. Thus the above allegation is based on an erroneous assumption

B Further, Appellant alleges that "However, as aforementioned, 'PVB film' is used in the meaning of not a pure 'PVB' but a 'PVB film' to which flexibility is imparted by a plasticizer. Thus the comparison and the consideration of different features is

erroneous in the finding of the cited invention 1. The determination of whether it is easily conceivable is obviously not reasonable.".

However, the "PVB film" of the cited invention 1 is as per described in Cited Document 1, as shown in the above 4(2). It can be seen as "PVB film" to which flexibility is imparted by a plasticizer. Thus the above allegation is not reasonable.

C Further, Appellant alleges that "it is submitted, however, that the present reason for refusal, the reason for refusal in the examination stage and the decision of rejection are totally silent about the existence of special circumstances to conclude that a person skilled in the art could have easily conceived of removing an essential component of a plasticizer from a polyvinyl butyral resin composition in which the addition of a plasticizer was essential and replacing with the other resin composition in the cited invention 1.".

As shown in the above 6(1), however, the reason for refusal does not determine the removal of a plasticizer from PVB (polyvinyl butyral resin composition), but determines the whole replacement of PVB interlayer film with an interlayer film of the other resin composition regardless of whether or not to include a plasticizer.

Therefore, the above allegation is not reasonable.

D Still further, Appellant alleges "the written amendment submitted on the same date with this written opinion specifies the upper limit with respect to the position of transparent film as 'an edge of a transparent film is disposed apart from the edges of the first and second interlayer films over the entire peripheral edge with a distance of 2 mm or more to 10 mm or less' in the present invention.

From this viewpoint, the inventive step of the present invention is not negated by the cited references 1 to 4 that do not mention about this point.".

The determination about the positions of an edge of a transparent film and an edge of an interlayer film is as per described in the above 6(2). Thus the above allegation is not acceptable.

7 Closing

As described above, the appellant should not be granted a patent for the Invention 1 under the provision of Article 29(2) of the Patent Act.

Therefore, the appeal decision shall be made as described in the conclusion.

March 27, 2018

Chief administrative judge:	OHASHI Kenichi
Administrative judge:	TAKIGUCHI Hiroshi
Administrative judge:	MIYAZAWA Takayuki