PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	27.06.2017
Applicant's or agent's file reference: PCT2017-15	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2017/017844	11.05.2017	31.05.2016

International Patent Classification (IPC) or both national classification and IPC

B32B27/16(2006.01)i, B32B27/26(2006.01)i, H01L51/50(2006.01)i, H05B33/02(2006.01)i

Applicant

LINTEC CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I — Basis of the opinion
- ☐ Box No. II — Priority
- ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV — Lack of unity of invention
- ☒ Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI — Certain documents cited
- ☐ Box No. VII — Certain defects in the international application
- ☐ Box No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/JP	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2017/017844

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____ , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

a. ☐ forming part of the international application as filed:

☐ in the form of an Annex C/ST.25 text file.

☐ on paper or in the form of an image file.

b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2017/017844

Box No. V **Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims		YES
	Claims	1-13	NO
Inventive step (IS)	Claims		YES
	Claims	1-13	NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims		NO

2. Citations and explanations:

Document 1: WO 2015/129626 A1 (LINTEC CORPORATION) 03 September 2015, Claims 1-2, 8, 11, paragraphs [0077]-[0097] & JP 15-129626 A1 & TW 201609426 A

Document 2: JP 2003-191371 A (TEIJIN LIMITED) 08 July 2003, paragraphs [0007], [0036]-[0037], [0058]-[0084] (Family: none)

Document 3: WO 2012/008276 A1 (KONICA MINOLTA HOLDINGS, INC.) 19 January 2012, Claims 1, 4-5, paragraphs [0021], [0116]-[0120], [0148]-[0160] (Family: none)

Document 4: JP 2009-244756 A (PANASONIC ELECTRIC WORKS CO., LTD.) 22 October 2009, paragraphs [0001]-[0002], [0031]-[0032] (Family: none)

The invention as in claims 1-13 is disclosed in document 1 cited in the ISR, and therefore lacks novelty and does not involve an inventive step.

<Claims 1, 6, and 8-11>

Document 1 (Claims 1-2, 8, and 11 and paragraphs [0077]-[0097]) discloses a gas barrier layered body

having a resin layer containing a base material, a gas barrier layer, and a bluing agent, the bas barrier layer comprising an inorganic vapor deposition film or a layer obtained by performing an ion implantation treatment on a layer including a polymer compound, and the gas barrier layered body having the following layer structure: gas barrier layer/base material/bluing-agent-containing layer. In Example 7, a layered body having a gas barrier layer/base material/bluing-agent-containing layer structure is disclosed in which the gas barrier layer is formed on one surface of the base material, and the bluing-agent-containing layer is formed on the other surface of the base material by applying a composition in which the bluing agent is added to a UV-curable resin liquid to the other surface so as to obtain an applied thickness of 1 μm and irradiating the applied composition with UV light.

The base material, the gas barrier layer, and the resin layer containing a bluing agent according to document 1 correspond to the base material layer, the gas barrier layer, and the layer comprising a cured material of an energy (ultraviolet-ray)-curable resin, respectively, and the layer structures of the respective layered bodies are the same. Based on paragraph [0096] of the present specification and paragraph [0078] of document 1, the inventions can be considered to use the same UV-curable resin, and the cured materials thereof are considered to have equivalent glass transition points.

<Claims 2-5>

Although document 1 (Claim 4 and paragraph [0096])

indicates that the moisture vapor transmission rate of the obtained gas barrier layered body at a temperature of 40°C and a relative humidity of 90% is 0.05 g/(m^2·day) or less, document 1 does not include a disclosure relating to the thermal shrinkage, deformation ratio, and in-plane retardation Re (550) of the gas barrier properties measured under the conditions specified in the invention as in claims 2-4 of the present application.

However, because the layered body of the invention as in claim 1 of the present application and the transparent gas barrier film disclosed in document 1 have the same structure, it is highly likely that equivalent performance would be obtained in a measurement of the evaluation items under the same conditions.

<Claim 7>

Document 1 (paragraph [0014]) indicates that a cycloolefin-based polymer is preferred for use as the material of the substrate.

<Claims 12-13>

Document 1 (Claims 12-13) discloses an electronic device member comprising the aforementioned gas barrier layered body, and an electronic device that uses the member.

The invention as in claims 1-5, 7-8, and 10-13 is disclosed in document 2 cited in the ISR, and therefore lacks novelty and does not involve an inventive step.

<Claims 1, 7-8, and 10-11>

Document 2 (paragraphs [0081]-[0083]) discloses obtaining a transparent gas barrier film by layering, by a sputtering method, a gas barrier layer and a polysiloxane resin layer in this order on one surface of

a film comprising a polycarbonate copolymer, the gas barrier layer comprising a silicon oxide thin film, subsequently applying/drying a composition including dimethylol tricyclodecane diacrylate on the surface on the reverse side from the surface on which the gas barrier layer is formed, then performing light irradiation using a high-pressure mercury lamp and forming a cured resin layer having a thickness of 4 μm, and then forming ITO by a sputtering method on the surface of the film on the reverse side thereof from the surface on which the silicon oxide thin film is layered.

The film comprising a polycarbonate copolymer, the gas barrier layer, and the cured resin layer of document 2 correspond to the polycarbonate base material layer, the gas barrier layer, and the cured material of the energy (ultraviolet-ray)-curable resin, respectively, of the present invention, and the layer structures of the respective layered bodies are also the same.

<Claims 2-5>

Although document 2 (paragraphs [0036]-[0037] and [0059]-[0084]) indicates that the moisture vapor permeability of the obtained gas barrier transparent film measured in a temperature range of 40°C and a relative humidity of 100% is < 0.01 g/m^2/24 hr, the in-plane retardation R (550) of the polycarbonate film is 8.9 nm, and the rate of dimensional change after heat treatment for 2 hours at 180°C is 0.1% or less, document 2 does not include a disclosure relating to the thermal shrinkage, deformation ratio, and in-plane retardation Re (550) of the gas barrier properties measured under the conditions specified in the invention as in claims 2-4 of the

present application.

However, because the layered body of the invention as in claim 1 of the present application and the transparent gas barrier film disclosed in document 2 have the same structure, it is highly likely that equivalent performance would be obtained in a measurement of the evaluation items under the same conditions.

On the basis of document 2 (paragraphs [0007], [0084], etc.), a person skilled in the art could anticipate the effects whereby the obtained transparent gas barrier film has excellent heat resistance, optical anisotropy, and dimensional stability (particularly dimensional stability after high-temperature heating).

<Claims 12-13>

Document 2 (paragraph [0058]) indicates that the transparent gas barrier film is particularly useful as a transparent gas barrier film for providing a flat-panel display or electronic paper having high reliability even when placed for a long time in a high-temperature, high-humidity condition when used as a transparent substrate for a liquid crystal display element, a photoconductive photoreceptor, a surface light emitter, an inorganic or organic EL element, electrophoresis, a field emission element, a plasma element, a plane heating element, or another transparent substrate.

The invention as in claims 1-5 and 7-13 is disclosed in document 3 cited in the ISR, and therefore lacks novelty and does not involve an inventive step.

<Claims 1 and 8-11>

Document 3 (claims 1 and 4-5, and paragraphs [0148]-[0160]) discloses a gas barrier film having a gas barrier

layer on at least one surface of a resin substrate, and a weather-resistant layer including metal oxide fine particles and a resin binder on the surface on the reverse side form the surface on which the gas barrier layer is provided, wherein the gas barrier layer is a surface-modified layer obtained by applying/drying a solution of a silicon compound having a polysilazane skeleton and forming a film, then irradiating the film with vacuum-ultraviolet light having a wavelength of 200 nm, or the gas barrier layer is a transparent vapor deposition layer obtained by heated vacuum vapor deposition using a mixture of silicon, silicon dioxide, and magnesium fluoride as a raw material, and the weather-resistant layer is formed by applying/drying a UV-curable hard coat agent so as to obtain a film thickness of 4 μm, and then curing the film using a high-pressure mercury lamp.

The resin substrate, the gas barrier layer, and the weather-resistant layer of document 3 correspond to the base material layer, the gas barrier layer, and the cured material of the energy (ultraviolet-ray)-curable resin, respectively, of the present invention, and the layer structures of the respective layered bodies are also the same.

<Claims 2-5 and 12-13>

Document 3 does not include a disclosure relating to the thermal shrinkage, deformation ratio, and in-plane retardation Re (550) of the gas barrier film measured under the conditions specified in the invention as in claims 2-5 of the present application.

However, because the layered body of the invention

as in claim 1 of the present application and the gas barrier film disclosed in document 3 have the same structure, it is highly likely that equivalent performance would be obtained in a measurement of the evaluation items under the same conditions.

On the basis of document 3 (paragraphs [0021], [0117], etc.), the effects whereby the obtained gas barrier film has high gas barrier properties, UV-shielding properties, water resistance, light stability, and low thermal shrinkage and is suitable in an organic electronic device such as an organic photoelectric conversion element or organic EL element could be anticipated by a person skilled in the art, and the effect whereby a low in-plane retardation value is obtained and contrast is enhanced in an image marking device are already known in the technical field of organic electronic devices such as organic photoelectric conversion elements or organic EL elements.

<Claim 7>

Document 3 (paragraphs [0116]-[0120]) indicates that polycarbonate is preferred for use as the material of the resin substrate.

The invention as in claim 6 could easily be carried out by a person skilled in the art on the basis of documents 2-4 cited in the ISR, and does not involve an inventive step.

Document 2 or 3 does not include a disclosure relating to the glass transition temperature of the curable resin used in a layer corresponding to the "layer comprising a cured material of an energy (ultraviolet-ray)-curable resin" of the present invention.

Box No. V **Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

However, document 4 (paragraphs [0001]-[0002] and [0031]-[0032]) indicates that a curable resin having a glass transition temperature of 170°C or higher is used out of consideration for heat resistance in gas barrier films used in liquid crystal displays, a plasma displays, EL displays, and other panel displays, and a person skilled in the art could easily apply this point to document 2 or 3 and use a curable resin having a glass transition temperature of 100°C or higher when using a curable resin in a light-emitting element or the like.

The invention as in claim 7 could easily be carried out by a person skilled in the art on the basis of documents 1-3 cited in the ISR, and does not involve an inventive step.

Document 1 (paragraph [0014]) indicates that a cycloolefin-based polymer is preferred for use as the material of the substrate from the perspective of transparency and versatility, and it would not be especially difficult to apply this point to the invention disclosed in documents 2 or 3.

Claim 1 of document 2 and paragraphs [0116]-[0120] of document 3 indicate that polycarbonate is preferred for use as the material of the base material, and it would not be especially difficult to apply this point to the invention disclosed in document 1.