

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) **21 December 2023**

Applicant's or agent's file reference
F23W1386

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/CN2023/092677

International filing date (day/month/year)
08 May 2023

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC
B32B7/12(2006.01)i; B32B15/085(2006.01)i; B32B27/40(2006.01)i

Applicant

DOW GLOBAL TECHNOLOGIES LLC et al.

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 43bis.1(a)(i) with regard to novelty, inventive step and 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 66.1bis(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/
**CHINA NATIONAL INTELLECTUAL
PROPERTY ADMINISTRATION**
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Date of completion of this opinion
18 December 2023

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**WRITTEN OPINION OF THE
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Box No. I

Basis of the 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(b)).
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.
 - b. ☐ furnished subsequent to the international filing date for the purposes of international search (Rule 13*ter*.1(a)),
☐ accompanied by a statement to the effect that the sequence listing does not go beyond the disclosure in the international application as filed.
4. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established to the extent that a meaningful opinion could be formed without a WIPO Standard ST.26 compliant sequence listing.
5. Additional comments:

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

1. Statement

Novelty (N)	Claims	1-14	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-14	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims	None	NO

2. Citations and explanations:

1. Citations:

D1: WO2020087433A1

D2: JP5942032B1

D1 discloses a laminate comprising: (a) a biaxially oriented polyethylene (BOPE) film comprising a polyethylene composition, wherein the BOPE film and the polyethylene film comprise at least 50 weight percent of the polyethylene composition based on the weight of the BOPE film; (b) a barrier adhesive layer comprising polyurethane; and (c) a polyethylene film, wherein the barrier adhesive layer adheres the BOPE film to the polyethylene film. The polyethylene film and the BOPE film comprise at least one of a high density polyethylene, a low density polyethylene, a linear low density polyethylene, or a combination thereof. The polyurethane comprises an isocyanate component comprising a single species of polyisocyanate; and an isocyanate-reactive component comprising a hydroxyl-terminated polyester incorporated as substantially-miscible solids in a carrier solvent, the polyester formed from a single species of a linear aliphatic diol having terminal hydroxyl groups and from 2 to 10 carbon atoms, and a linear dicarboxylic acid. D1 also discloses an article formed from a laminate according to the preceding laminate (See claims 1-14, description, page 20, lines 16 to page 23, examples).

D2 discloses an adhesive composition for forming laminate, comprises two-component curable polyester urethane adhesive agent comprising aromatic polyester urethane polyol containing plant-derived component as main component and polyfunctional isocyanate compound as curing agent. The aromatic polyester urethane polyol comprises 30-99% mass acid component of aromatic polyester polyol(P1) comprising plant-derived component and 1-70% mass acid component of aromatic polyester polyol(P2) comprising petroleum-derived component. The number average molecular weight of the polyester polyol (P1) is 400-8000. The content of multifunctional aliphatic carboxylic acid component of polyester polyol (P1) is 30-80 mol%. The number average molecular weight of polyester polyol (P2) is 400-8000. The content of aromatic polyfunctional carboxylic acid in polyester polyol (P2) is 40-80 mol% (See abstract, description, paragraphs 10-15).

2. Novelty Step:

1. Claim 1 sets forth a laminate material, Claim 13 sets forth an article comprising the laminate material of any one of claims 1-12, Claim 14 sets forth a method for preparing the laminate material of any one of claims 1-12. D1 is considered to be the prior art document closest to the present invention. D1 does not disclose all of the technical features of claims 1-14. Therefore, claims 1-14 are novel in the sense of PCT Article 33(2).

3. Inventive Step:

(1) For claims 1 and 13, it is not disclosed by D1 that the first and second metallization layers are deposited on first and second polyethylene films respectively, the adhesive layer disposed between the first and second metallized layers, and the laminate material has greater than 90 wt.%PE based on the total weight of the laminate material. D1 also discloses that it is providing a metal layer on a film substrate through vacuum metallization to provide barrier properties to multilayer structures such as films and laminates (paragraph 2). To further enhance barrier properties of film, the person skilled in the art would easily choose to metallize polyethylene film substrate. The adhesive layer disposed between the first and second metallized layers, and the laminate material has greater than 90wt.% PE based on the total weight of the laminate material are also common technical options, and the technical effect of which is expected.

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Box No. V

**Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability;
citations and explanations supporting such statement**

(2) For dependent claim 4, D2 discloses a two-component polyurethane adhesive composition comprising a polyester polyol component and a polyisocyanate component. A person skilled in the art would have easily conceived the technical solution defined in claim 4 by combining D1, D2 and a common practice.

(3) For dependent claims 2-3, 5-12, the distinguishing features are either disclosed by D1-2, or common technical option for a person skilled in the art.

(4) For claim 14, D1 also discloses the barrier adhesive layer adheres the BOPE film to the polyethylene film, and the barrier adhesive comprises two-component polyurethane adhesive composition.

Therefore, claims 1-14 do not involve an inventive step in the sense of PCT Article 33(3).

Industrial applicability:

The technical solution of claims 1-14 can be used in industry. Thus, claims 1-14 are industrially applicable under PCT Article 33(4).

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Multiple dependent claims 6-12 depend on multiple dependent claims, so claims 6-12 do not satisfy the criteria set out in PCT Rule 6.4(a).

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 8 refers to claim 8, the scope of protection is not clear, thereby, claim 8 does not meet the requirement of PCT Article 6.