

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To: STERNER, Craig M.  ARMSTRONG WORLD INDUSTRIES, INC. 2500 Columbia Avenue P.O. Box 3001 Lancaster, Pennsylvania 17604-3001 USA		Date of mailing (day/month/year) <b>13 December 2018 (13.12.2018)</b>	
Applicant's or agent's file reference 17038-WO-ABP		<b>FOR FURTHER ACTION</b> See paragraph 2 below	
International application No. <b>PCT/US2018/048222</b>	International filing date (day/month/year) <b>28 August 2018 (28.08.2018)</b>	Priority date(day/month/year) 29 August 2017 (29.08.2017)	
International Patent Classification (IPC) or both national classification and IPC <b>B05D 7/24(2006.01)i, C09D 125/14(2006.01)i, C09D 131/04(2006.01)i, C09D 7/43(2018.01)i, C09D 7/45(2018.01)i,          C09D 7/61(2018.01)i, B05D 1/02(2006.01)i, E04B 9/04(2006.01)i</b>			
Applicant <b>ARMSTRONG WORLD INDUSTRIES, INC.</b>			
<p>1. This opinion contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> 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</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p> <p>2. <b>FURTHER ACTION</b></p> <p>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.</p> <p>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.</p> <p>For further options, see Form PCT/ISA/220.</p>			

Name and mailing address of the ISA/KR International Application Division Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea Facsimile No. +82-42-481-8578	Date of completion of this opinion  13 December 2018 (13.12.2018)	Authorized officer  LEE, Dal Kyong  Telephone No. +82-42-481-8440
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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

**PCT/US2018/048222**

**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*.I(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*.I(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*.I(a)).
    - on paper or in the form of an image file (Rule 13*ter*.I(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:

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- the entire international application  
 claims Nos. 7-15, 24-32, 36-43, 47-56, 60-66, 71-87

because:

- the said international application, or the said claims Nos. \_\_\_\_\_  
relate to the following subject matter which does not require an international search (*specify*):

- the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 8,15,25,32,56,61,65,72,74,86,87  
are so unclear that no meaningful opinion could be formed (*specify*):

1. Claims 8, 25, 32, 56, 61, 65, 72 and 74 are unclear since they refer to claims which are not searchable due to not being drafted in accordance with third sentence of Rule 6.4(a).
2. Claims 86 and 87 are unclear since they refer to claims which are not searchable due to not being drafted in accordance with second sentence of Rule 6.4(a).
3. Claim 15 does not comply with PCT Rule 6.1(b), because claim 15 is missing in this application.

- the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported  
by the description that no meaningful opinion could be formed (*specify*):

- no international search report has been established for said claims Nos. 7-15, 24-32, 36-43, 47-56, 60-66, 71-87

- a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

- furnish a sequence listing in the form of an Annex C/ST.25 text file, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.
- furnish a sequence listing on paper or in the form of an image file complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.
- pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13<sup>ter</sup>.1(a) or (b).

- See Supplemental Box for further details.

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**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	<u>1-6,16-23,33-35,44-46,57-59,67-70</u>	YES
	Claims	<u>NONE</u>	NO
Inventive step (IS)	Claims	<u>NONE</u>	YES
	Claims	<u>1-6,16-23,33-35,44-46,57-59,67-70</u>	NO
Industrial applicability (IA)	Claims	<u>1-6,16-23,33-35,44-46,57-59,67-70</u>	YES
	Claims	<u>NONE</u>	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: US 2015-0330072 A1 (ARMSTRONG WORLD INDUSTRIES, INC.) 19 November 2015

D2: KR 10-2007-0097155 A (CHUNG, W. C.) 04 October 2007

D3: US 5526628 A (KNUDSON, GARY A.) 18 June 1996

1. Novelty and inventive step

1.1 Claims 1-6, 16 and 17

1.1.1 Independent Claim 1

D1, which is considered to be the closest prior art to the subject matter of claim 1, discloses a coated non-woven veil comprising:

a non-woven veil having an airflow resistance of greater than 45 mks rayls, comprising: glass fibers; a filler; and a coating comprising:

a binder;

particles; and

viscosity modifying agent, wherein the binder can include monomers of vinyl acetate, styrene, wherein the particles include pigments, and wherein a binder concentration is such that the pigment to binder ratio is in the range from about 5:1 to about 30:1 on a dry solids basis (See paragraphs [0048]-[0057]; and claims 13-17).

Claim 1 differs from D1 in a coated building panel comprising: a body comprising a first major surface and a side surface that intersects the first major surface; a coating applied to at

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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:

1. Claims 7, 9-14, 24, 26-31, 36-43, 47-55, 60, 62-64, 66, 71, 73 and 75-85 do not comply with PCT Rule 6.4(a) because multiple dependent claims should not serve as a basis for any other multiple dependent claim.
2. Claims 81-85 do not comply with PCT Rule 6.4(a) because the multiple dependent claim does not refer to other claims in the alternative way.
3. The unit of area employed in claim 16 is not additionally expressed in terms of the units stipulated by PCT Rule 10.1(a).
4. Claim 15 does not comply with PCT Rule 6.1(b), because claim 15 is missing in this application.

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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:

1. The expression "about" used in claims 1, 4, 6, 16, 18, 21, 23, 33, 44, 59, 67 and 70 is vague and unclear, thereby rendering the definition of the subject matters of said claims unclear (PCT Article 6).
2. The phrase "the seam-filing material" of claim 67 is considered to be corrected by "the seam-filling material" (PCT Article 6).

**Supplemental Box**

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least one of the major surface or the side surface (difference 1); and a binder having a pH of at least about 7.0 and a Tg of about 20°C (difference 2).

The difference 1 comes within the scope of the customary practice followed by persons skilled in the art considering building panel in D1 (See paragraph [0001]).

Considering that binder A is polyvinyl acetate and binder E is styrene acrylic copolymer in the application (See paragraph [0149]; and table 5), the difference 2 is one of several straight forward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill considering that the binder can include monomers of vinyl acetate, styrene in D1 (See paragraph [0055]).

Therefore, claim 1 is novel under PCT Article 33(2) but lacks an inventive step under PCT Article 33(3) as being obvious over D1.

1.1.2 Dependent Claims 2-6, 16 and 17

The additional feature of claim 2 can readily be predicted by a person skilled in the art from D1 in that the binder can include monomers of vinyl acetate, styrene (See paragraph [0055]).

The additional features of claims 3 and 5 are some of several straight forward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill considering that the binder can include monomers of vinyl acetate, styrene in D1 (See paragraph [0055]).

The additional features of claims 4 and 6 can readily be predicted by a person skilled in the art from D1 in that the binder can include monomers of vinyl acetate, styrene (See paragraph [0055]).

The additional features of claims 16 and 17 can readily be predicted by a person skilled in the art considering a non-woven veil having an airflow resistance of greater than 45 mks rayls and the veil comprising from about 110 dry g/m<sup>2</sup> to about 135 dry g/m<sup>2</sup> of the coating in D1 (See claims 13, 14).

Therefore, claims 2-6, 16 and 17 are novel under PCT Article 33(2) but lack an inventive step

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under PCT Article 33(3) as being obvious over D1.

1.2 Claims 18-23

1.2.1 Independent Claim 18

D1, which is considered to be the closest prior art to the subject matter of claim 18, discloses a coating comprising:

a binder;

particles;

an aqueous carrier; and

viscosity modifying agent, wherein the binder can include monomers of vinyl acetate, styrene, wherein the particles include pigments, and wherein a binder concentration is such that the pigment to binder ratio is in the range from about 5:1 to about 30:1 on a dry solids basis (See paragraphs [0048]-[0057]; and claims 13-17).

Claim 18 differs from D1 in a binder having a pH of at least about 7.0 and a Tg of about 2 0°C (difference 1); and the liquid carrier which is present in an amount ranging from about 10 wt.% to about 30 wt.% based on the total weight of the coating composition (difference 2).

Considering that binder A is polyvinyl acetate and binder E is styrene acrylic copolymer in the application (See paragraph [0149]; and table 5), the difference 1 is one of several straight forward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill considering that the binder can include monomers of vinyl acetate, styrene in D1 (See paragraph [0055]).

The difference 2 can be simply optimized and controlled by routine experimental means according to experimental conditions by a person skilled in the art.

Therefore, claim 18 is novel under PCT Article 33(2) but lacks an inventive step under PCT Article 33(3) as being obvious over D1.

1.2.2 Dependent Claims 19-23

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The additional feature of claim 19 can readily be predicted by a person skilled in the art from D1 in that the binder can include monomers of vinyl acetate, styrene (See paragraph [0055]).

The additional features of claims 20 and 22 are some of several straight forward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill considering that the binder can include monomers of vinyl acetate, styrene in D1 (See paragraph [0055]).

The additional features of claims 21 and 23 can readily be predicted by a person skilled in the art from D1 in that the binder can include monomers of vinyl acetate, styrene (See paragraph [0055]).

Therefore, claims 19-23 are novel under PCT Article 33(2) but lack an inventive step under PCT Article 33(3) as being obvious over D1.

### 1.3 Claims 33-35

#### 1.3.1 Independent Claim 33

D1, which is considered to be the closest prior art to the subject matter of claim 33, discloses a coated non-woven veil comprising:

a non-woven veil having an airflow resistance of greater than 45 mks rays, comprising: glass fibers; a filler; and a coating comprising:

a binder;

particles;

dispersant; and

viscosity modifying agent, wherein the particles include pigments, and wherein a binder concentration is such that the pigment to binder ratio is in the range from about 5:1 to about 30:1 on a dry solids basis (See paragraphs [0048]-[0057]; and claims 13-17).

Claim 33 differs from D1 in a coated building panel comprising: a body comprising a first major surface and a side surface that intersects the first major surface; a coating applied to at least one of the major surface or the side surface (difference 1); and a viscosity modifier comprising a humectant and a dispersant present in a weight ratio ranging from about 1:1 to

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about 4:1 (difference 2).

The difference 1 comes within the scope of the customary practice followed by persons skilled in the art considering building panel in D1 (See paragraph [0001]).

Regarding the difference 2, D2 discloses a soluble dispersion-process pigment comprising:  
a binder;

an inorganic pigment; and

a humectant, wherein the humectant is selected from a fatty acid ester and ester (See claims 1, 3, 5).

Claim 33 still differs from D1 and D2 in the weight ratio of humectant to dispersant.

However, the difference can be simply controlled and applied by routine experimental means according to experimental conditions by a person skilled in the art considering that 5 to 10% by weight of an ester type humectant and 2.5% by weight of dispersant are added in D2 (See paragraph [0065]).

Therefore, claim 33 is novel under PCT Article 33(2) but lacks an inventive step under PCT Article 33(3) as being obvious over D1 in view of D2.

#### 1.3.2 Dependent Claims 34 and 35

The additional feature of claim 34 is merely a matter of design option when general knowledge in the relevant field of the art is used considering that a humectant comprises ester and a fatty acid ester in D2 (See claim 5).

The additional feature of claim 35 is one of several straight forward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill.

Therefore, claims 34 and 35 are novel under PCT Article 33(2) but lack an inventive step under PCT Article 33(3) as being obvious over D1 in view of D2.

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1.4 Claims 44-46

1.4.1 Independent Claim 44

D1, which is considered to be the closest prior art to the subject matter of claim 44, discloses a coating comprising:

a binder;

particles;

an aqueous carrier;

dispersant; and

viscosity modifying agent, wherein the particles include pigments, and wherein a binder concentration is such that the pigment to binder ratio is in the range from about 5:1 to about 30:1 on a dry solids basis (See paragraphs [0048]-[0057]; and claims 13-17).

Claim 44 differs from D1 in a viscosity modifier comprising a humectant and a dispersant present in a weight ratio ranging from about 1:1 to about 4:1 (difference 1); and the liquid carrier which is present in an amount ranging from about 10 wt.% to about 30 wt.% based on the total weight of the coating composition (difference 2).

However, regarding the difference 1, D2 discloses a soluble dispersion-process pigment comprising:

a binder;

an inorganic pigment; and

a humectant, wherein the humectant is selected from a fatty acid ester and ester (See claims 1, 3, 5).

Claim 44 still differs from D1 and D2 in the weight ratio of humectant to dispersant.

However, the difference can be simply controlled and applied by routine experimental means according to experimental conditions by a person skilled in the art considering that 5 to 10% by weight of an ester type humectant and 2.5% by weight of dispersant are added in D2 (See paragraph [0065]).

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The difference 2 can be simply controlled and applied by routine experimental means according to experimental conditions by a person skilled in the art.

Therefore, claim 44 is novel under PCT Article 33(2) but lacks an inventive step under PCT Article 33(3) as being obvious over D1 in view of D2.

1.4.2 Dependent Claims 45 and 46

The additional feature of claim 45 is merely a matter of design option when general knowledge in the relevant field of the art is used considering that a humectant comprises ester and a fatty acid ester in D2 (See claim 5).

The additional feature of claim 46 is one of several straight forward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill.

Therefore, claims 45 and 46 are novel under PCT Article 33(2) but lack an inventive step under PCT Article 33(3) as being obvious over D1 in view of D2.

1.5 Claims 57-59

1.5.1 Independent Claim 57

D1, which is considered to be the closest prior art to the subject matter of claim 57, discloses a coating comprising:

a binder;

particles;

an aqueous carrier; and

viscosity modifying agent, wherein the particles include pigments, a binder concentration is such that the pigment to binder ratio is in the range from about 5:1 to about 30:1 on a dry solids basis (See paragraphs [0048]-[0057]; and claims 13-17).

Claim 57 differs from D1 in spray-coating a composition to a building surface.

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However, the difference comes within the scope of the customary practice followed by persons skilled in the art considering building panel in D1 (See paragraph [0001]).

Therefore, claim 57 is novel under PCT Article 33(2) but lacks an inventive step under PCT Article 33(3) as being obvious over D1.

1.5.2 Dependent Claims 58 and 59

The additional feature of claim 58 can be easily modified or optimized by a person skilled in the art without the exercise of inventive skill considering that a binder concentration is such that the pigment to binder ratio is in the range from about 5:1 to about 30:1 on a dry solids basis in D1 (See paragraph [0057]).

The additional feature of claim 59 is not disclosed in D1.

However, considering that binder A is polyvinyl acetate and binder E is styrene acrylic copolymer in the application (See paragraph [0149]; and table 5), the feature can readily be predicted by a person skilled in the art from D1 in that the binder can include monomers of vinyl acetate, styrene in D1 (See paragraph [0055]).

Therefore, claims 58 and 59 are novel under PCT Article 33(2) but lack an inventive step under PCT Article 33(3) as being obvious over D1.

1.6 Claim 67-70

1.6.1 Independent Claim 67

D1, which is considered to be the closest prior art to the subject matter of claim 67, discloses a coated non-woven veil comprising:

glass fibers; a filler; and a coating comprising:

a binder;

particles; and

viscosity modifying agent, wherein the binder can include monomers of vinyl acetate, styrene, wherein the particles include pigments, and wherein a binder concentration is such that the

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pigment to binder ratio is in the range from about 5:1 to about 30:1 on a dry solids basis (See paragraphs [0048]-[0057]; and claims 13-17).

Claim 67 differs from D1 in a first building panel positioned adjacent to a second building panel, and a seam formed between the first and second building panels (difference 1); a sea-filling material applied to the seam (difference 2); a coating applied to the first and second building panels and the seam-filling material (difference 3); and a binder having a pH of at least about 7.0 and a Tg of about 20°C (difference 4).

However, regarding the difference 1, D3 discloses the building combination comprising: a first skin panel having a female connecting flange portion at one side; a frame panel extending generally transverse to said first skin panel; a second skin panel having a male connecting flange portion at one side; and a continuous seam that secures said first and second skin panels and frame panels together as an integral dual skin-single frame panel section (See claim 1).

The difference 2 is merely a means that can be added by a person skilled in the art, and no unexpected effects or properties are indicated in the application.

The difference 3 can readily be predicted from D1 by a person skilled in the art considering a coated non-woven veil in D1 (See claim 1).

Considering that binder A is polyvinyl acetate and binder E is styrene acrylic copolymer in the application (See paragraph [0149]; and table 5), the difference 4 is one of several straight forward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill considering that the binder can include monomers of vinyl acetate, styrene in D1 (See paragraph [0055]).

Therefore, claim 67 is novel under PCT Article 33(2) but lacks an inventive step under PCT Article 33(3) as being obvious over D1 in view of D3.

#### 1.6.2 Dependent Claims 68-70

The additional feature of claim 68 can readily be predicted by a person skilled in the art from

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D1 in that the binder can include monomers of vinyl acetate, styrene (See paragraph [0055]).

The additional feature of claim 69 is one of several straight forward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill considering that the binder can include monomers of vinyl acetate, styrene in D1 (See paragraph [0055]).

The additional feature of claim 70 can readily be predicted by a person skilled in the art from D1 in that the binder can include monomers of vinyl acetate, styrene (See paragraph [0055]).

Therefore, claims 68-70 are novel under PCT Article 33(2) but lack an inventive step under PCT Article 33(3) as being obvious over D1 in view of D3.

## 2. Industrial Applicability

Claims 1-6, 16-23, 33-35, 44-46, 57-59 and 67-70 are industrially applicable under PCT Article 33(4).