

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference C17W0375J	FOR FURTHER ACTION		See item 4 below
International application No. PCT/CN2017/086240	International filing date (<i>day/month/year</i>) 27 May 2017 (27.05.2017)	Priority date (<i>day/month/year</i>) 31 May 2016 (31.05.2016)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant PPG COATINGS (TIANJIN) CO., LTD.			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report 04 December 2018 (04.12.2018)
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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
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 Haidian District, Beijing

 LIU, SHEN & ASSOCIATES

PCT

WRITTEN OPINION OF THE
 INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing <i>(day/month/year)</i> 11 August 2017	
Applicant's or agent's file reference C17W0375J	FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/CN2017/086240	International filing date <i>(day/month/year)</i> 27 May 2017
Priority date <i>(day/month/year)</i> 31 May 2016	
International Patent Classification (IPC) or both national classification and IPC B05D 7/14(2006.01)i; B05D 5/06(2006.01)i; C09D 5/38(2006.01)i	
Applicant PPG COATINGS (TIANJIN) CO., LTD.	

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/ STATE INTELLECTUAL PROPERTY OFFICE OF THE P.R.CHINA China 6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing 100088	Date of completion of this opinion 07 August 2017	Authorized officer MA,Zhenpeng
Facsimile No. (86—10) 62019451	Telephone No. (86-10)62084940	

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2017/086240

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(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 filed or furnished:
 - a. (means)
 - on paper
 - in electronic form
 - b. (time)
 - in the international application as filed
 - together with the international application in electronic form
 - subsequently to this Authority for the purposes of search
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 in 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.

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Box No. II Priority

1. The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:
 - [1] The right of priority of the application is valid.

**WRITTEN OPINION OF THE
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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	<u>1-11</u>	YES
	Claims	<u>None</u>	NO
Inventive step (IS)	Claims	<u>1-11</u>	YES
	Claims	<u>None</u>	NO
Industrial applicability (IA)	Claims	<u>1-11</u>	YES
	Claims	<u>None</u>	NO

2. Citations and explanations :

- [1] The reference is made according to the following document:
- [2] D1: CN102548669A, 04 July 2012 (04.07.2012)
- [3] D1 (description, paragraphs [0034],[0112],[0116],[0143],[0150],[0162],[0165],[0169],[0172] and [0174]-[0180]) discloses a process for forming a multi-layer coating film, the multi-layer coating system and the object coated therewith. Step (1), an organic solvent-based first colored coating composition (A) containing (a1) a polyester resin and (a2) a melamine resin is coated on an object to form an uncured first colored coating film. The solid content ratio of the coating film can be adjusted by an air blowing means before coating an organic solvent-based second colored coating composition (B). Step (2), the organic solvent-based second colored coating composition (B) containing (b1) an acrylic resin containing a hydroxyl group, (b2) a melamine resin, and (b3) an acid catalyst is coated on an uncured first colored coating film formed in the step (1), so that an uncured second colored coating film is formed. Moreover, it is preferable for the organic solvent-based second colored coating composition (B) to further include a pigment. As the aluminum pigment, there are non-leafing type aluminum and leafing type aluminum. The solid content ratio of the coating film can be adjusted by an air blowing means before coating a clear coating composition (C). Step (3), the clear coating composition (C) is coated on the uncured second colored coating film that is formed by the step (2). As the type of base resin, an acrylic resin can be mentioned. Furthermore, tackifier can be appropriately included. After coating of the clear coating composition (C), it is preferable to leave it for 1-60 min at room temperature. Step (4), the uncured first colored coating film, the uncured second colored coating film, and the uncured clear coating film formed in the aforementioned steps (1)-(3) are simultaneously heated and cured. The heating temperature is preferably 120-160°C. In addition, the heating time is preferably 15-40 min. As the object to be coated, automobile parts can be mentioned. The material of the object to be coated is metallic materials such as aluminum.
- [4] Novelty:
- [5] The subject-matter of claim 1, 9 or 10 differs from D1 at least in the nitro-modified acrylic resin, the electro-plated aluminum powders, and the anti-sagging resin. Therefore, claim 1, 9 or 10 is novel in the sense of PCT Article 33 (2).
- [6] Claims 2-8 and 11 refer to claim 1 or 10, so they are also novel in the sense of PCT Article 33 (2).
- [7] Inventive step:
- [8] However, the combination of the nitro-modified acrylic resin and the electro-plated aluminum powders in the second coating composition, and the anti-sagging resin in the third coating composition are neither indicated in D1 nor obviously rendered from common knowledge for a person skilled in the art. So, it is not obvious for a person skilled in the art to arrive at the solutions of claims 1, 9 and 10. Therefore, claims 1, 9 and 10 involve an inventive step and meet the criteria set out in PCT Article 33 (3).
- [9] Claims 2-8 and 11 refer to claim 1 or 10, so they also involve an inventive step and meet the criteria set out in PCT Article 33 (3).
- [10] Industrial applicability:

**WRITTEN OPINION OF THE
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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**

[11] Claims 1-11 are industrially applicable and meet the requirements set out in PCT Article 33 (4), respectively.