

**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 <b>669536</b>	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. <b>PCT/JP2009/070974</b>	International filing date ( <i>day/month/year</i> ) <b>16 December 2009 (16.12.2009)</b>	Priority date ( <i>day/month/year</i> ) <b>18 December 2008 (18.12.2008)</b>	
International Patent Classification (8th edition unless older edition indicated) <b>See relevant information in Form PCT/ISA/237</b>			
Applicant <b>KABUSHIKI KAISHA KOBE SEIKO SHO</b>			

<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 14 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 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 checked="" 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 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 checked="" 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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<p align="center">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p>	<p>Date of issuance of this report <b>05 July 2011 (05.07.2011)</b></p>
	<p>Authorized officer</p> <p align="center"><b>Masashi Honda</b></p> <p>e-mail: pt08.pct@wipo.int</p>

PATENT COOPERATION TREATY

**TRANSLATION**

From the  
INTERNATIONAL SEARCHING AUTHORITY

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing  
(day/month/year)

Applicant's or agent's file reference <b>669536</b>		<b>FOR FURTHER ACTION</b> See paragraph 2 below
International application No. <b>PCT/JP2009/070974</b>	International filing date (day/month/year) <b>16.12.2009</b>	Priority date (day/month/year) <b>18.12.2008</b>
International Patent Classification (IPC) or both national classification and IPC		
Applicant <b>KABUSHIKI KAISHA KOBE SEIKO SHO</b>		

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 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 66.1bis(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.

3. For further details, see notes to Form PCT/ISA/220.

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

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Box No. I	Basis of this opinion
	<p>1. With regard to the <b>language</b>, this opinion has been established on the basis of:</p> <p><input checked="" type="checkbox"/> the international application in the language in which it was filed</p> <p><input type="checkbox"/> 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)).</p> <p>2. <input type="checkbox"/> This opinion has been established taking into account the <b>rectification of an obvious mistake</b> authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))</p> <p>3. With regard to any <b>nucleotide and/or amino acid sequence</b> disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:</p> <p>a. type of material</p> <p><input type="checkbox"/> a sequence listing</p> <p><input type="checkbox"/> table(s) related to the sequence listing</p> <p>b. format of material</p> <p><input type="checkbox"/> on paper</p> <p><input type="checkbox"/> in electronic form</p> <p>c. time of filing/furnishing</p> <p><input type="checkbox"/> contained in the international application as filed</p> <p><input type="checkbox"/> filed together with the international application in electronic form</p> <p><input type="checkbox"/> furnished subsequently to this Authority for the purposes of search</p> <p>4. <input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto 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.</p> <p>5. Additional comments:</p>

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Box No. IV Lack of unity of invention

1.  In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:
- paid additional fees
  - paid additional fees under protest and, where applicable, the protest fee
  - paid additional fees under protest but the applicable protest fee was not paid
  - not paid additional fees
2.  This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- complied with
  - not complied with for the following reasons:

The special technical feature of the invention in claim 1 relates to "the aforementioned precoating film comprises an intermolecularly-cross-linked base resin and fine particles, and the aforementioned precoating film has a gel percentage of 50% or more and a surface roughness of 0.25  $\mu\text{m}$  or more in terms of arithmetic average roughness (Ra)". The special technical feature of the invention in claim 10 relates to "the aforementioned precoating film comprises a thermosetting resin obtained by intermolecular cross-linking of an epoxy-based resin and a non-yellowing isocyanate-based curing agent, and the gel percentage of the aforementioned precoating film is 70% to 92%".

These inventions do not have a technical relationship involving one or more of the same or corresponding special technical features, and therefore are not considered to be so linked as to form a single general inventive concept.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

all parts

the parts relating to claims Nos. \_\_\_\_\_

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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>		
1.	Statement		
	Novelty (N)	Claims <u>1-15</u>	YES
		Claims _____	NO
	Inventive step (IS)	Claims _____	YES
		Claims <u>1-15</u>	NO
	Industrial applicability (IA)	Claims <u>1-15</u>	YES
		Claims _____	NO
2.	Citations and explanations:		
<p>Document 1: JP 2004-17454 A (The Furukawa Electric Co., Ltd.), 22 January 2004, claims, paragraphs [0009], [0012], [0026] and [0043], fig. 1</p> <p>Document 2: JP 7-166125 A (Kobe Steel, Ltd.), 27 June 1995, claims</p> <p>Document 3: JP 10-44305 A (Kobe Steel, Ltd.), 17 February 1998, claims, paragraphs [0009], [0013] and [0014], examples</p> <p>Document 4: JP 2006-305841 A (Kobe Steel, Ltd.), 09 November 2006, claims, paragraphs [0046] and [0049], fig. 1 and 3</p> <p>Document 5: JP 2007-290358 A (Kobe Steel, Ltd.), 08 November 2007, paragraphs [0025] and [0059]</p> <p>Document 6: JP 10-204656 A (Kobe Steel, Ltd.), 04 August 1998, paragraphs [0016] and [0028]</p> <p>Document 7: JP 2006-35842 A (Kobe Steel, Ltd.), 09 February 2006, claims, paragraph [0067], symbol 4 of tables 1 to 3 of examples</p> <p>Document 8: JP 2004-330703 A (Kobe Steel, Ltd.), 25 November 2004, claims, paragraphs [0036], [0037] and [0053], examples 1 to 7 and 14 to 19</p>			

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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
	<p>Document 9: JP 2002-97408 A (Sumitomo Metal Industries, Ltd.; Sumitomo Metal Steel Products Inc.), 02 February 2002, paragraphs [0011] and [0029]</p> <p>A. The invention as in claims 1 to 3 and 7 to 9 do not involve an inventive step in the light of documents 1 to 4 cited in the ISR.</p> <p>Document 1 describes a precoated aluminum sheet having a precoating film formed on the surface of an aluminum sheet.</p> <p>Document 1 does not indicate that (1) the abovementioned precoating film comprises an intermolecularly-cross-linked base resin and fine particles, (2) the gel percentage of the abovementioned precoating film is 50% or more, or (3) the surface roughness of the abovementioned precoating film is 0.25 <math>\mu\text{m}</math> or more in arithmetic average roughness (Ra).</p> <p>Examining the abovementioned matter (1), a precoated metal sheet having a precoating film formed on the surface of a metal sheet, wherein the aforementioned precoating film contains an intermolecularly-cross-linked base resin (described in document 2), and the aforementioned precoating film contains fine particles (described in document 3) are respectively publicly known. Therefore, a person skilled in the art could easily employ a precoating film comprising an intermolecularly-cross-linked base resin and fine particles in the abovementioned precoated aluminum sheet described in document 1.</p> <p>Furthermore, examining the abovementioned matter (2), document 1 indicates that the abovementioned precoated aluminum sheet is intended to solve the problem of enhancing the solvent resistance of the precoating film. Meanwhile, as described in document 4 (paragraph [0049]), it is publicly</p>

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	<p>known that in a precoated aluminum sheet having a precoating film formed on the surface of an aluminum sheet, if the gel percentage of the aforementioned precoating film is larger, the solvent resistance of the aforementioned precoating film is enhanced. Therefore, in the abovementioned precoated aluminum sheet described in document 1, in order to enhance the solvent resistance of the precoating film, a person skilled in the art could easily increase the gel percentage of the precoating film to 50% or more.</p> <p>Furthermore, examining the abovementioned matter (3), as described in document 3, in a precoated metal sheet having a precoating film formed on the surface of a metal sheet, the problem of enhancing the blocking resistance of the aforementioned precoating film would be obvious. Moreover, as described in document 3 (paragraph [0009]), it is publicly known that if the surface roughness of the aforementioned precoating film is larger, the blocking resistance of the aforementioned precoating film is enhanced. Therefore, in the abovementioned precoated aluminum sheet described in document 1, in order to enhance the blocking resistance of the precoating film, a person skilled in the art could easily make the surface roughness of the precoating film larger to 0.25 <math>\mu\text{m}</math> or more in arithmetic average roughness (Ra).</p> <p>Furthermore, document 3 indicates that the fine particles contained in the abovementioned precoating film are organic fine particles. Furthermore, document 3 (paragraph [0013]) indicates that in the case where fine particles are added to the abovementioned precoating film, to make the precoating film rough on the surface, if the softening point of the fine particles are higher, a larger surface roughness can be obtained. Moreover, cross-linked fine particles are considered</p>

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to be higher in softening point than non-crosslinked fine particles, and therefore cross-linked fine particles are considered to make the surface roughness of a precoating film larger than non-cross-linked fine particles. Accordingly, in the abovementioned precoated aluminum sheet described in document 1, a person skilled in the art could easily employ organic fine particles as the fine particles contained in the precoating film and cross-link the fine particles in order to make the softening point of fine particles higher to make the surface roughness of the precoating film larger.

Moreover, document 1 indicates that the thickness of the abovementioned precoating film is 1 to 20  $\mu\text{m}$ , and document 3 (paragraph [0014] and examples) indicates that the fine particles contained in the abovementioned precoating film are spherical and that the particle size thereof is 1 to 50  $\mu\text{m}$ . Therefore, a person skilled in the art could easily conceive of the invention as in claims 3, 8 and 9 of the present application.

In addition, in the abovementioned precoated aluminum sheet described in document 1, in order to adjust the surface roughness of the precoating film, a person skilled in the art could easily experimentally optimize the content of the fine particles contained in the precoating film to comply with the range specified in claim 7 of the present application.

B. The invention as in claims 4 and 5 does not involve an inventive step in the light of documents 1 to 5 cited in the ISR.

Document 1 indicates that the abovementioned precoated aluminum sheet is intended to solve the problem of enhancing the drawability. Furthermore, as described in document 5



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(paragraph [0059]), in a precoated aluminum sheet having a precoating film formed on the surface of an aluminum sheet, the problem of enhancing the scratch resistance of the aforementioned precoating film would be obvious. Meanwhile, in a precoated aluminum sheet in which a precoating film containing an intermolecularly-cross-linked base resin is formed on the surface of an aluminum sheet, if the glass transition temperature of the aforementioned base resin is higher, the drawability is considered to decline (see the disclosure of paragraph [0046] of document 4). Furthermore, if the glass transition temperature of the aforementioned base resin is higher, the hardness of the aforementioned intermolecularly-cross-linked base resin becomes higher, and therefore the scratch resistance of the precoating film is considered to be enhanced. Therefore, in the abovementioned precoated aluminum sheet described in document 1, in order to achieve a balance between the drawability and the scratch resistance of the precoating film, a person skilled in the art could easily experimentally optimize the glass transition temperature of the base resin contained in the precoating film to comply with the range specified in claim 4 or 5 of the present application.

In addition, as described in document 1 (paragraph [0026]), it is publicly known that a film comprising a polyester resin is more excellent in moldability than a film comprising another resin. Furthermore, as described in document 2, in a precoated aluminum sheet in which a precoating film containing an intermolecularly-cross-linked base resin is formed on the surface of an aluminum sheet, it is publicly known that the aforementioned base resin is a cross-linked polyester resin obtained by the cross-linking reaction of a polyester resin using a melamine-based curing

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agent or isocyanate-based curing agent. Therefore, in the abovementioned precoated aluminum sheet described in document 1, a person skilled in the art could easily employ the abovementioned polyester resin described in document 2 as the base resin contained in the precoating film.

C. The invention as in claim 6 does not involve an inventive step in the light of documents 1 to 4 and 6 cited in the ISR.

In view of the disclosure of document 6 (paragraph [0016]), in a precoated aluminum sheet having a precoating film formed on the surface of an aluminum sheet, it is considered that the precoating film can have glossiness. Furthermore, document 6 (paragraph [0016]) indicates that if the surface roughness of the precoating film is larger, the glossiness of the precoating film declines. Therefore, in the abovementioned precoated aluminum sheet described in document 1, in order to achieve a balance between the block resistance and the glossiness of the precoating film, a person skilled in the art could easily experimentally optimize the surface roughness of the precoating film, to comply with the range specified in claim 6 of the present application.

D. The invention as in claims 10 to 12 does not involve an inventive step in the light of documents 1, 2 and 4 and 7 to 9 cited in the ISR.

Each of documents 7 and 8 describes a precoated metal sheet having a precoating film formed on the surface of a metal sheet, in which the aforementioned precoating film is a thermosetting resin obtained by intermolecular cross-linking of an epoxy-based resin and an isocyanate-based curing agent.

Documents 7 and 8 do not indicate that (4) the abovementioned metal sheet is an aluminum sheet, (5) the

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abovementioned isocyanate-based curing agent is non-yellowing, or (6) the gel percentage of the abovementioned precoating film is 70% to 92%.

Examining the abovementioned matter (4), as described in document 2, a precoated metal sheet having a precoating film formed on the surface of a metal sheet, in which the aforementioned metal sheet is an aluminum sheet, is publicly known, and therefore in the abovementioned precoated metal sheet described in document 7 or 8, a person skilled in the art could easily employ an aluminum sheet as the metal sheet.

Furthermore, examining the abovementioned matter (5), as described in document 9 (paragraph [0011]), in a precoated metal sheet in which a precoating film comprising a thermosetting resin obtained by intermolecular cross-linking of a resin and an isocyanate-based curing agent is formed on the surface of a metal sheet, the problem of enhancing the discoloration resistance of the precoating film would be obvious. Furthermore, document 9 (paragraph [0029]) describes employing a non-yellowing curing agent as the aforementioned isocyanate-based curing agent, as a means for solving the aforementioned problem. Therefore, in the abovementioned precoated metal sheet described in document 7 or 8, in order to enhance the discoloration resistance of the precoating film, a person skilled in the art could easily employ a non-yellowing curing agent as the isocyanate-based curing agent contained in the precoating film.

Furthermore, examining the abovementioned matter (6), each of documents 7 and 8 indicates that the abovementioned precoated metal sheet is intended to solve the problem of enhancing the drawability. Furthermore, as described in document 1, in a precoated metal sheet having a precoating film formed on the surface of a metal sheet, the problem of

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enhancing the solvent resistance of the precoating film would be obvious.

Meanwhile, in view of the disclosure of document 4 (paragraph [0046]), in a precoated metal sheet in which a precoating film comprising a thermosetting resin obtained by intermolecular cross-linking of a resin and a curing agent is formed on the surface of a metal, if the glass transition temperature of the aforementioned thermosetting resin is higher, the drawability is considered to decline. Furthermore, if the intermolecularly-cross-linking degree of the abovementioned thermosetting resin is higher and the gel percentage of the thermosetting resin is larger, then the glass transition temperature of the thermosetting resin is considered to be higher. Therefore, in the abovementioned precoated metal sheet, if the gel percentage of the thermosetting resin is made larger, the drawability is considered to decline. Furthermore, as described in document 4 (paragraph [0049]), in a precoated metal sheet having a precoating film formed on the surface of a metal sheet, it is publicly known that if the gel percentage of the aforementioned precoating film is larger, the solvent resistance of the aforementioned precoating film is enhanced.

Therefore, in the abovementioned precoated metal sheet described in document 7 or 8, in order to achieve a balance between the drawability and the solvent resistance of the precoating film, a person skilled in the art could easily experimentally optimize the gel percentage of the precoating film to comply with the range specified in claim 10 or 11 of the present application.

Furthermore, each of documents 7 and 8 also indicates that the abovementioned isocyanate-based curing agent is of the block type.

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E. The invention as in claims 13 and 14 does not involve an inventive step in the light of documents 1 to 4 and 7 to 9 cited in the ISR.

As described in document 3, in a precoated metal sheet having a precoating film formed on the surface of a metal sheet, the problem of enhancing the blocking resistance of the aforementioned precoating film would be obvious, and furthermore as described in document 3 (paragraphs [0009] and [0014]), it is publicly known that if cross-linked spherical organic fine particles are added to the aforementioned precoating film to make the surface roughness larger, the blocking resistance of the aforementioned precoating film can be enhanced. Therefore, in the abovementioned precoated metal sheet described in document 7 or 8, in order to enhance the blocking resistance of the precoating film, a person skilled in the art could easily add inorganic fine particles or cross-linked spherical organic fine particles to the precoating film to make the surface roughness of the precoating film larger to an arithmetic average roughness (Ra) of 0.25  $\mu\text{m}$  or more.

F. The invention as in claim 15 does not involve an inventive step in the light of documents 1 to 4 and 6 to 9 cited in the ISR.

In view of the disclosure of document 6 (paragraph [0016]), in a precoated metal sheet having a precoating film formed on the surface of a metal sheet, it is considered that the precoating film can have glossiness, and furthermore document 6 (paragraph [0016]) indicates that if the surface roughness of the precoating film becomes larger, the glossiness of the precoating film declines. Therefore, in the

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citations and explanations supporting such statement

abovementioned precoated metal sheet described in document 7 or 8, in order to achieve a balance between the blocking resistance and the glossiness of the precoating film, a person skilled in the art could easily experimentally optimize the surface roughness of the precoating film to comply with the range specified in claim 15 of the present application.