

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
13 August 2009 (13.08.2009)

PCT

(10) International Publication Number
WO 2009/100344 A3

(51) International Patent Classification:
B05D 1/08 (2006.01)

(21) International Application Number:
PCT/US2009/033409

(22) International Filing Date:
6 February 2009 (06.02.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/027,097 8 February 2008 (08.02.2008) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:
18 February 2010

(54) Title: THERMALLY ADAPTIVE SURFACES FOR RECEIVING THERMAL SPRAYS

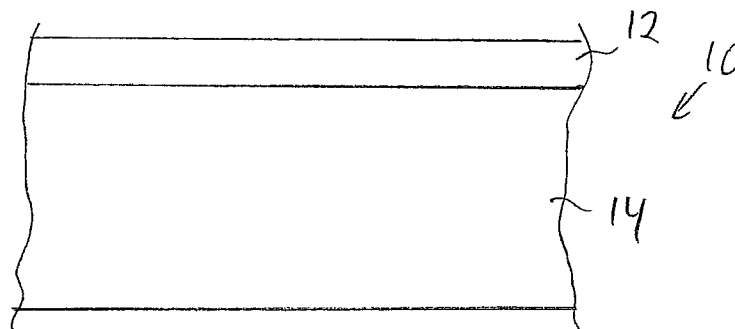


FIG. 1

(57) Abstract: A method is disclosed for applying thermal spray particles to a composite, wherein the method includes the steps of providing a composite that includes a thermally sensitive surface, and applying the thermal spray particles at a temperature that is high enough to cause a temperature-dependent change in the thermally sensitive surface of the composite. The temperature-dependent change improves adhesion between the thermal spray particles and the composite.



WO 2009/100344 A3

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/033409

A. CLASSIFICATION OF SUBJECT MATTER

INV. B05D1/08

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B05D C04B C23C D21F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03/004171 A (VALTION TEKNILLINEN [FI]; KOLARI MIKA [FI]) 16 January 2003 (2003-01-16) abstract claims 1,4,6,7,10 page 1, paragraph 2 page 2, paragraphs 4,5 page 3, paragraph 1 -----	1-3
X	EP 1 044 944 A (UNITED TECHNOLOGIES CORP [US]; GEN ELECTRIC [US]; NASA [US] UNITED TEC) 18 October 2000 (2000-10-18) claims 21,24 paragraph [0021] ----- -/--	1-3



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

12 August 2009

Date of mailing of the international search report

14/12/2009

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/033409

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE WPI Week 199148 Thomson Scientific, London, GB; AN 1991-351294 XP002532461 & JP 03 237077 A (HONDA T) 22 October 1991 (1991-10-22) abstract -----	1,2
A	US 5 217 815 A (DAS SANTOSH K [US] ET AL) 8 June 1993 (1993-06-08) the whole document -----	1-3,10
A	US 2003/113566 A1 (CLEMENS PAUL L [US] ET AL) 19 June 2003 (2003-06-19) abstract claims 1,2,7,9,14,15 paragraphs [0003], [0007], [0030], [0045], [0056], [0115], [0120], [0147], [0150] -----	3,4
A	WO 2006/049592 A (POLYKINETICS INC [US]; NEUKIRCHEN JOHN D [US]; DEPOTI JOSEPH A [US]; C) 11 May 2006 (2006-05-11) abstract claims 1,4,5,8,10,11,17,20 page 2, lines 14,15 page 3, lines 11,12 page 5, lines 14-25 page 6, lines 13,14,16-26 page 7, lines 21-23 -----	1-5,10, 11
A	WO 97/15719 A (VALMET CORP [FI]) 1 May 1997 (1997-05-01) the whole document -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/033409

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: —
because they relate to subject matter not required to be searched by this Authority, namely:
;
2. ☒ Claims Nos.: —
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1(part)-5,8-11

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: -

;

Continuation of Box II.2

Claims Nos.: -

Claims 1 and 2 are not supported by the description as required by Article 6 PCT, as their scope is broader than justified by the description and drawings. The reasons therefor are the following:

The subject-matter of claims 1 and 2 comprises the following technical features:

A method of applying thermal spray particles to a composite, including:

- a Providing a composite;
- b The composite includes a surface;
- c Applying thermal spray particles.

According to the description a method for spray coating a composite substrate (chapter: "Summary", p.3 and p.4) with thermal spray particles that in situ form a pore-network, thereby improving adhesion, is disclosed. It becomes apparent from the description and the examples that the following restrictions are essential for the invention:

- The composite is a fiber comprising thermosetting resin (Claim 3);
- The thermal spray comprises carbides and ceramics (p.6, lines 8-9);
- Forming an in situ pore-network (p.4, line 3);
- The fibers burn up and leave voids (p.7, line 19);
- The fibers are provided in an outer surface of the composite (p.7, lines 14-16);
- An additional surface layer (p.5, line 20);

Since independent claims 1 and 2 do not contain these features they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

Claims 1 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

result:

- "[...] applying the thermal spray particles at a temperature that is high enough to cause a [...] change [...]"
- "[...] the [...] change improves adhesion [...]"

The terms "thermally sensitive" and "temperature dependent change" used in claim 1 are vague and unclear and leaves the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claim unclear, Article 6 PCT.

The terms "low temperature material used in claim 2 is vague and unclear and leaves the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claims unclear, Article 6 PCT.

Based on the reasoning above a meaningful search on the subject-matter of claims 1 and 2 seems not possible. Hence the scope of claims 1 and 2 is restricted to the following:

Claim 1:

1. A method of applying thermal sprayed particles to a composite, wherein said method includes the steps of providing a composite that includes a thermally sensitive surface, and applying the thermal spray particles at a temperature that is high enough to cause a temperature-dependent change in the thermally sensitive surface of the composite, wherein the temperature-dependent change improves adhesion between the thermal spray particles and the composite.

Said composite includes in a least a surface portion thereof, low temperature material within the composite that irreversibly changes when subjected to the thermal spray particles at a high temperature. The low temperature material includes cellulosic fibers (see pages 8 and 9).

Any further reference to claim 1 is to be understood as being directed to the restricted claim 1 as depicted above.

The restricted claim 1 is understood to be limiting the scope of the search and is not deemed to be considered as an allowable amendment in the sense of Article 34(2)b) PCT.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2),

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

should the problems which led to the Article 17(2)PCT declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1(part)-5,8-11

A method for applying a thermal spray to a composite comprising a surface fitted with fibers.

2. claims: 1(part),6,7,10,11

A method for applying a thermal spray to a composite comprising a thermosetting resin.

3. claims: 12-22

A composite material having a surface hardness of less than 50 HRB.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/033409

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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