

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 March 2008 (06.03.2008)

PCT

(10) International Publication Number
WO 2008/027561 A3

(51) International Patent Classification:
C09C 3/12 (2006.01) C09C 1/40 (2006.01)
C09C 1/36 (2006.01)

(21) International Application Number:
PCT/US2007/019212

(22) International Filing Date: 31 August 2007 (31.08.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/841,826 1 September 2006 (01.09.2006) US

(71) Applicant (for all designated States except US): CABOT CORPORATION [US/US]; Two Seaport Lane, Suite 1300, Boston, MA 02210-2019 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): FOMITCHEV, Dmitry [RU/US]; 105 Fifer Lane, Lexington, MA 02420 (US). WILLIAMS, William, R. [US/US]; 12 Pinevale Avenue, Reading, MA 01867 (US). WHICHER, Casey, P. [US/US]; 26 Commonwealth Terrace, #16, Brighton, MA 02135 (US). XIONG, Jincheng [US/US]; 90 Flag Hill Road, Boxborough, MA 01719 (US).

(74) Agent: LANDO, Michelle, B.; Cabot Corporation, 157 Concord Road, Billerica, MA 01821 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, 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, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

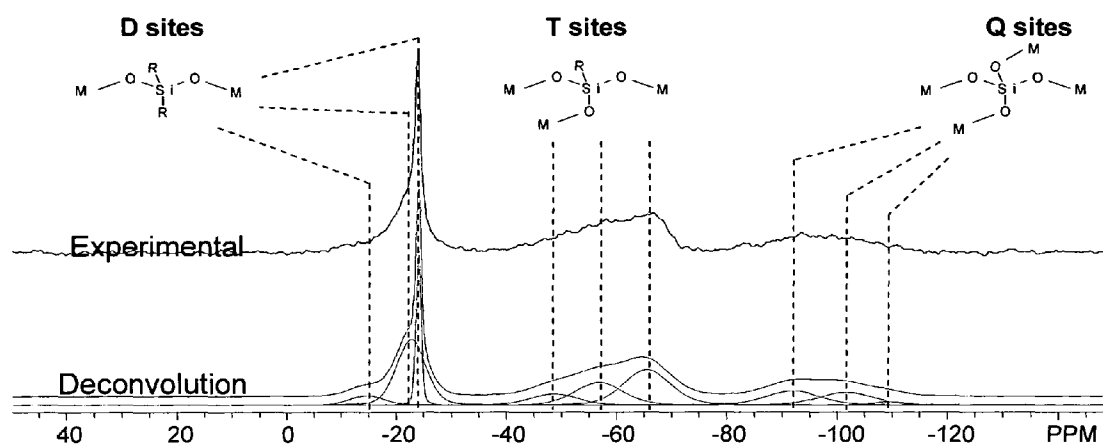
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, 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
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
8 May 2008

(54) Title: SURFACE-TREATED METAL OXIDE PARTICLES



(57) Abstract: The invention provides surface-treated metal oxide particles. The surface-treated metal oxide particles have specific ratios of (1) the integrated area of the resonance signals with chemical shifts in the range from -4 ppm to -33 ppm to the integrated area of the resonance signals with chemical shifts in the range from -33 ppm to -76 ppm and (2) the integrated area of the resonance signals with chemical shifts in the range from -76 ppm to -130 ppm to the integrated area of the resonance signals with chemical shifts in the range from -33 ppm to -76 ppm in the CP/MAS 29Si NMR spectrum. The invention further provides a toner composition for electrophotographic image formation comprising toner particles and surface-treated metal oxide particles.

WO 2008/027561 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/019212

A. CLASSIFICATION OF SUBJECT MATTER

INV. C09C1/36 C09C1/40 C09C3/12

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)

C09C

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, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 981 131 A (HIRAMA KAZUHIRO [US] ET AL) 9 November 1999 (1999-11-09)	13-15, 17, 18, 20, 21, 23-26
A	column 2, line 50 - line 65 column 4, line 21 - line 48 column 5, line 64 - line 67 column 7, line 10 - line 62	16, 19
X	EP 1 204 006 A (RICOH KK [JP]) 8 May 2002 (2002-05-08)	13-18, 23-26
A	paragraphs [0008], [0025], [0060] - [0064], [0095], [0131]	19-21
	-/--	

 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

11 March 2008

Date of mailing of the international search report

19/03/2008

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Nobis, Barbara

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/019212

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 851 715 A (BARTHEL HERBERT [DE] ET AL) 22 December 1998 (1998-12-22) column 3, line 46 - line 52 column 6, line 1 - line 30 examples 4,5	13-21
P,X	DE 10 2005 039436 A1 (CLARIANT INT LTD [CH]) 22 February 2007 (2007-02-22)	13,15-21
P,A	paragraphs [0005], [0022], [0031]	14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/019212

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.: 1-12, 22
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 1-12 and 22 are defined by unusual parameters.

- 2. Claims Nos.: 1-12, 22
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:

- 1. As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable 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.:

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.

Continuation of Box II.1

Claims Nos.: 1-12,22

Claims 1-12 and 22 are defined by unusual parameters.

Continuation of Box II.2

Claims Nos.: 1-12,22

Present claims 1-12 and 22 relates to a product defined (inter alia) by reference to the following unusual parameter:

ratios D:T and Q:T of certain integrated areas of the resonance signals with a certain chemical shift in a CP/MAS ²⁹Si-NMR spectrum

The use of this unusual parameter in the present context is considered to lead to a lack of clarity because the claim does not clearly identify the products encompassed by it as the parameters cannot be clearly and reliably determined by indications in the description or by objective procedures which are usual in the art. This makes it impossible to compare the claims to the prior art. As a result, the application does not comply with the requirement of clarity under Article 6 PCT.

There are also no clear instructions given in the description to prepare products having the desired parameter values (Art. 5 PCT).

The search of claims 13-21 and 23-26 was restricted to the subject-matter defined in these dependent claims.

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

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/019212

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5981131	A	09-11-1999	CA 2338584 A1	10-02-2000
			EP 1127295 A1	29-08-2001
			JP 2002521736 T	16-07-2002
			WO 0007073 A1	10-02-2000
EP 1204006	A	08-05-2002	DE 60116577 T2	07-09-2006
			JP 2002148847 A	22-05-2002
			US 2002136973 A1	26-09-2002
US 5851715	A	22-12-1998	NONE	
DE 102005039436 A1		22-02-2007	WO 2007020062 A2	22-02-2007