

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
26 June 2008 (26.06.2008)

PCT

(10) International Publication Number
WO 2008/075750 A3(51) International Patent Classification:
C09D 11/00 (2006.01) C08F 6100 (2006.01)
C09B 67/00 (2006.01)

(74) Agents: OHTANI, Tamotsu et al; OHTANI PATENT OFFICE, Bridgestone Toranomon Bldg., 6F, 25-2, Toranomon 3-chome, Minato-ku, Tokyo 105-0001 (JP).

(21) International Application Number:
PCT/JP2007/074584

(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, 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

(22) International Filing Date:
13 December 2007 (13.12.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2006-341884 19 December 2006 (19.12.2006) JP
2007-263533 9 October 2007 (09.10.2007) JP

(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).

(71) Applicant (for all designated States except US): KAO CORPORATION [JP/JP]; 14-10, Nihonbashi Kayabacho 1-chome, Chuo-ku, Tokyo 103-8210 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): MIZUSHIMA, Ryūta [JP/JP]; c/o Kao Corporation, Research Laboratories, 1334, Minato, Wakayama-shi, Wakayama 640-8580 (JP). TAKIZAWA, Nobuyuki [JP/JP]; c/o Kao Corporation, Research Laboratories, 1334, Minato, Wakayama-shi, Wakayama 640-8580 (JP).

Published:

— with international search report

(88) Date of publication of the international search report:
4 September 2008

WO 2008/075750 A3

(54) Title: WATER-BASED INKS FOR INK-JET PRINTING

(57) **Abstract:** The present invention relates to (1) a process for producing a water dispersion for ink-jet printing containing colorant-containing polymer particles which includes a step I of obtaining a dispersion of colorant-containing polymer particles; a step II of obtaining a water dispersion of the colorant-containing polymer particles from the dispersion obtained in the step I; a step III of mixing the water dispersion obtained in the step II with an organic solvent (B) to suitably control a relative dielectric constant of a mixed solvent in the resultant dispersion, thereby precipitating the colorant-containing polymer particles; and a step IV of separating precipitates obtained in the step III from the dispersion and re-dispersing the precipitates in a water-based solvent; (2) a water-based ink for ink-jet printing which is excellent in ejection stability and optical density; (3) a process for purifying a water dispersion for ink-jet printing; and (4) a process for producing a dispersion containing groups of fine particles.

INTERNATIONAL SEARCH REPORT

International application No

PCT/JP2007/074584

A. CLASSIFICATION OF SUBJECT MATTER

INV. C09D11/00 C09B67/00 C08F6/00

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)

C09D C09B C08F

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 2006/095794 A (KAO CORP [JP]; DOI YASUHIRO [JP]; ITO YASUSHI [JP]; NAGASHIMA SHIGEKI) 14 September 2006 (2006-09-14) claims; examples	1-9,13
X	----- WO 2006/046759 A (KAO CORP [JP]; UMADA AKIRA [JP]; AZUMA KOJI [JP]; TANAKA NOBUSHIGE [JP] 4 May 2006 (2006-05-04) claims; examples	1-9,13
X	----- WO 2006/054787 A (KAO CORP [JP]; TANAKA NOBUSHIGE [JP]; TSURU ISAO [JP]; HOSHI MASATO [J] 26 May 2006 (2006-05-26) claims; examples	1-9,13
	----- - / --	



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 June 2008

Date of mailing of the international search report

18/06/2008

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

Schmitz, volker

INTERNATIONAL SEARCH REPORT

International application No	PCT/JP2007/074584
------------------------------	-------------------

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No
X	wo 2006/049291 A (KAO CORP [JP]; TAKIZAWA NOBUYUKI [JP] ; UMADA AKIRA [JP]; TANAKA NOBUSH) 11 May 2006 (2006-05-11) claims ; examples -----	1-9, 13
X	EP 1 215 251 A (KONISHIROKU PHOTO IND [JP]) 19 June 2002 (2002-06-19) claims ; examples -----	1-9, 13
X	US 2004/171773 AI (BU LUJIA [US] ET AL) 2 September 2004 (2004-09-02) paragraph [0007] ; claims ; examples -----	10-12
X	wo 2005/061590 A (DUPONT ELECTRONIC POLYMERS L P [US] ; SHEEHAN MICHAEL T [US] ; SOUNIK JA) 7 July 2005 (2005-07-07) page 6 - page 8 ; claims ; examples -----	10-12
X	US 2 910 460 A (ARIES ROBERT S) 27 October 1959 (1959-10-27) claims ; examples -----	10-12
X	US 2 322 072 A (THOMAS ROBERT M ET AL) 15 June 1943 (1943-06-15) claim 10 -----	10-12
X	US 2 462 564 A (SKEEN JOHN R) 22 February 1949 (1949-02-22) column 1, line 30 - line 37 -----	10-12
A	wo 02/28916 A (CHEVRON PHILLIPS CHEMICAL CO [US]) 11 April 2002 (2002-04-11) claims ; examples -----	10-12
A	US 2003/144470 AI (SHEEHAN MICHAEL T [US]) 31 July 2003 (2003-07-31) claims; examples -----	10-12
A	US 3 715 344 A (MAZZANTI G ET AL) 6 February 1973 (1973-02-06) claims ; examples -----	10-12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2007/074584

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. **J 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:

3. **J 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 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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-9,13

A process for producing a water dispersion for inkjet printing containing particles of a polymer which contain a colorant, an organic solvent and water comprising the steps I to IV and an ink produced according said process.

2. claims: 10-12

A process for producing a dispersion containing groups of fine particles comprising the steps i and ii or iii.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No	
PCT/JP2007/074584	

Patent document cited in search report		Publication date	Patent family member(s)			Publication date
wo 2006095794	A	14-09-2006	GB	2437474	A	24-10-2007
wo 2006046759	A	04-05-2006	GB	2433941	A	11-07-2007
			US	2007289485	AI	20-12-2007
wo 2006054787	A	26-05-2006	GB	2433939	A	11-07-2007
wo 2006049291	A	11-05-2006	CN	101048473	A	03-10-2007
			GB	2433940	A	11-07-2007
EP 1215251	A	19-06-2002	DE	60111480	DI	21-07-2005
			DE	60111480	T2	24-11-2005
			US	2002112644	AI	22-08-2002
US 2004171773	AI	02-09-2004	NONE			
wo 2005061590	A	07-07-2005	CA	2545966	AI	07-07-2005
			CN	1890296	A	03-01-2007
			EP	1699850	AI	13-09-2006
			JP	2007514053	T	31-05-2007
US 2910460	A	27-10-1959	DE	1068891	B	
			GB	848753	A	21-09-1960
			IT	568134	A	
US 2322072	A	15-06-1943	NONE			
US 2462564	A	22-02-1949	NONE			
wo 0228916	A	11-04-2002	AR	030856	AI	03-09-2003
			AU	9098701	A	15-04-2002
			CA	2421666	AI	11-04-2002
			EP	1325041	A2	09-07-2003
			JP	2004510848	T	08-04-2004
US 2003144470	AI	31-07-2003	NONE			
US 3715344	A	06-02-1973	BE	550093	A	
			CA	1013497	A2	05-07-1977
			CH	368623	A	15-04-1963
			DE	1420559	AI	10-10-1968
			DE	1494168	AI	02-01-1970
			DE	1494188	AI	15-10-1970
			DE	1494189	AI	12-03-1970
			DE	1794361	BI	19-07-1973
			DE	1094985	B	15-12-1960
			DK	111588	B	16-09-1968
			FR	1157793	A	03-06-1958
			FR	1184072	A	16-07-1959
			GB	849106	A	21-09-1960
			GB	875132	A	16-08-1961
			IT	557911	A	
			LU	34560	A	
			NL	209562	A	
			SE	322052	B	23-03-1970
			US	3582987	A	01-06-1971
			US	3175999	A	30-03-1965
			US	3112300	A	26-11-1963