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(71) Applicant (for all designated States except US): XAAR LIM-ITED [GB/GB]; 2 Cambridge Science Park, Milton Road,

ITED [GB/GB]; 2 Cambridge Science Park, Milton Road, Cambridge CB4 4FD (GB).

(72) Inventors; and
(75) Inventors/Applicants (for US only): GRIFFIN, Mary, Catherine, Ambrose [GB/GB]; 4 The Lawns, Clerk Maxwell Road, Cambridge CB3 0RU (GB). HOWARTH, Leslie George [GB/GB]; 22 Frensham Close, Banbury, Oxfordshire OX16 7FQ (GB). TATUM, John, Philip [GB/GB]; 5 Mill Street, Isleham, Cambridgeshire CB7 5RY (GB).

(74) Agent: CROPP, John, Anthony, David; Mathys & Squire, 100 Grays Inn Road, London WC1X 8AL (GB).

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(57) Abstract

A coating on a substrate which endows the substrate with a desired surface property, the coating comprising a cross-linked polysiloxane containing X'- and X- groups attached to different Si atoms wherein the groups X'- are monovalent organic groups which provide the desired surface property and the groups X- are monovalent organic groups which are reactive with a group on the substrate surface and have a higher surface tension than the groups X'-, said coating being bonded to said substrate by reaction of X- groups with substrate surface groups reactive therewith. In one embodiment a non-wetting coating is provided wherein the X'-group has the formula CF_3Z - where Z is a divalent organic group or the formula $CH_3(CH_2)_t$ where t is at least 3.

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A. CLASSIFICATION OF SUBJECT MATTER IPC 6 C09D183/08 C09D4/ C09D4/00 B41J2/16 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 C08J B41J IPC 6 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) C. DOCUMENTS CONSIDERED TO BE RELEVANT Relevant to claim No. Citation of document, with indication, where appropriate, of the relevant passages Category ' 1-7 US,A,5 266 222 (PAUL B. WILLIS) 30 X November 1993 see claims 1, 2, 6, 7, 24, 26see column 8; example 2 see column 4, line 43 - column 5, line 29 see column 6, line 12 - line 27 see column 6, line 28 - line 49 1 EP,A,O 477 805 (PPG INDUSTRIES INC.) 1 X April 1992 see claims 1, 2, 8, 11, 12see page 2, line 45 - page 3, line 7 Patent family members are listed in annex. ĺΧ Further documents are listed in the continuation of box C. X Special categories of cited documents: "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 "A" document defining the general state of the art which is not considered to be of particular relevance 'X' document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to 'E' earlier document but published on or after the international filing date involve an inventive step when the document is taken alone "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another '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 docucitation or other special reason (as specified) 'O' document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled other means in the art. *P* document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of mailing of the international search report Date of the actual completion of the international search 1 6, 02, 96 18 January 1996 Authorized officer 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 Depijper, R

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C.(Continu	ntion) DOCUMENTS CONSIDERED TO BE RELEVANT	
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP,A,O 367 438 (AM INTERNATIONAL INC.) 9 May 1990 see claims 1,3,5-7,12-18 see page 3, column 3, line 20 - line 29 see page 3, column 4, line 38 - line 55 see page 4, column 5, line 7 - column 6, line 8	1
X	EP,A,O 525 598 (MATSUHITA ELECTRIC INDUSTRIAL CO. LTD.) 3 February 1993 see claims 1-3,5,6 see page 4; example 1	1
A	EP,A,O 479 493 (XEROX CORPORATION) 8 April 1992 see claim 1	1
A	DE,A,42 29 433 (SIEMENS AG.) 10 March 1994 see claims 1,5,6	1
A	EP,A,O 497 204 (MATSUHITA ELECTRIC INDUSTRIAL CO. LTD.) 5 August 1992 see claims 1,3,5,6	1
A	EP,A,O 571 896 (MATSUHITA ELECTRIC INDUSTRIAL CO. LTD.) 1 December 1993 see claims 1,10 see page 3, line 15 - line 24 see page 3, line 40 - line 56	1
A	EP,A,O 195 292 (IBM) 24 September 1986 see claims 1-3	1

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information on patent family members

Inter nal Application No PCI/GB 95/02041

Patent document ited in search report	Publication date	Patent family member(s)		Publication date	
US-A-5266222	30-11-93	NONE			
EP-A-477805	01-04-92	US-A-	5308705	03-05-94	
		AT-T-	130357	15-12-95	
		CA-A-	2049632	29-03-92	
		DE-D-	69114648	21-12-95	
		JP-A-	4363386	16-12-92	
		KR-B-	9501706	28-02-95	
		US-A-	5328768	12-07-94	
EP-A-367438	09-05-90	CA-A-	1329341	10-05-94	
		DE-D-	68912879	17-03-94	
		DE-T-	68912879	26-05-94	
		JP-A-	2164548	25-06-90	
		US-A-	5010356	23-04-91	
EP-A-525598	03-02-93	EP-A-	0672779	20-09-95	
L 020030	00 02 00	JP-A-	5193056	03-08-93	
EP-A-479493	08-04-92	 US-A-	5136310	04-08-92	
LI X 4/3433	00 07 32	JP-A-	4234663	24-08-92	
DE-A-4229433	10-03-94	NONE			
EP-A-497204	05-08-92	JP-A-	4250158	07-09-92	
EF-X-43/204	00 00 32	JP-A-	4255344	10-09-92	
		CA-A-	2060026	29-07-92	
		KR-B-	9503700	17-04-95	
		US-A-	5443511	22-08-95	
		DE-D-	69205849	14-12-95	
		EP-A-	0498339	12-08-92	
		KR-B-	9510641	21-09-95	
		US-A-	5372888	13-12-94	
EP-A-571896	01-12-93	JP-A-	6327971	29-11-94	
2 3, 1030	•• ••	US-A-	5338579	16-08-94	
EP-A-195292	24-09-86		4643948	17-02-87	
FL -W - 133535	ET 03 00	CA-A-	1227160	22-09-87	
		JP-C-	1638823	31-01-92	

information on patent family members

Inter onal Application No
PCI/GB 95/02041

				33/02041
Patent document cited in search report EP-A-195292	Publication date	Patent fam member(s	Patent family member(s)	
		JP-B- JP-A- 6	3000232 1220863	07-01-91 01-10-86