(19) World Intellectual Property **Organization**

International Bureau

4 November 2004 (04.11.2004)



(43) International Publication Date

PCT

(10) International Publication Number WO 2004/094330 A3

(51) International Patent Classification⁷: C08G 18/12, 18/28, C09J 175/04, 5/06

(21) International Application Number:

PCT/US2004/008540

(22) International Filing Date: 19 March 2004 (19.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

10/408,139 4 April 2003 (04.04.2003)

(71) Applicant (for all designated States except US): NA-TIONAL STARCH AND CHEMICAL INVESTMENT HOLDING CORPORATION [US/US]; P.O. Box 7663, Wilmington, DE 19803-7663 (US).

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): HUNG, Ju-Ming [US/US]; 1358 Knox Drive, Yardley, PA 19067 (US). ZHANG, YUE, S. [CN/US]; 166 Grantham Drive, Somerset, NJ 08873 (US). GEFRI, Michael, T. [US/US]; 163 Hope Road, Blairstown, NJ 07825 (US).
- (74) Agents: ALMER, Charles, W. et al.; National Starch and Chemical, 10 Finderne Avenue, Bridgewater, NJ 08807 (US).

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, 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, IT, LU, MC, 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
- (88) Date of publication of the international search report: 27 January 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

fional Application No

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C08G18/12 C08G18/28 C09J5/06 C09J175/04 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) IPC 7 COSG CO9J EO4F B290 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, PAJ C. DOCUMENTS CONSIDERED TO BE RELEVANT Relevant to claim No. Citation of document, with indication, where appropriate, of the relevant passages 1,2,4,7 US 6 121 354 A (CHRONISTER) X 19 September 2000 (2000-09-19) column 2, line 65 - column 6, line 35; Α claims 1,6,8; examples 1-101,2,4,7 EP 0 540 950 A (THE YOKOHAMA RUBBER) χ 12 May 1993 (1993-05-12) page 2, line 39 - page 3, line 58; claims 1,13,14; examples 1-6; table 2 Α 1,4,7,8 EP 0 632 077 A (MINNESOTA MINING AND X MANUFACTURING) 4 January 1995 (1995-01-04) page 2, line 17 - page 5, line 34 page 9, line 1 - line 12; claims 1,4,9,10; examples 1-7; table I Α -/--Patent family members are listed in annex. Further documents are listed in the continuation of box C. χ ° 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 invention "E" earlier document but published on or after the international "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 "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) "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 docu-ments, such combination being obvious to a person skilled in the cet." "O" document referring to an oral disclosure, use, exhibition or 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 28/10/2004 11 October 2004 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, Bourgonje, A

Fax: (+31-70) 340-3016

INTERNATIONAL SEARCH REPORT

ational Application No
/US2004/008540

C.(Continu	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	7 0320047 000340		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	US 5 472 785 A (STOBBIE IV ET AL)	1,4		
A	5 December 1995 (1995-12-05) column 3, line 32 - column 4, line 44 column 7, line 62 - column 9, line 30 claims 16-11; examples 12,13; tables 1,3	9		
E	WO 2004/037883 A (NATIONAL STARCH AND CHEMICAL INVESTMENT HOLDING) 6 May 2004 (2004-05-06) page 3, line 10 - page 12, line 3; claims 1-29; examples	1,4,7		
Α .	DE 100 56 322 A (VOLKSWAGEN) 2 January 2003 (2003-01-02) column 2, line 1 - line 46; claim 1	9		
	-			

INTERNATIONAL SEARCH REPORT

Information on patent family members

tional Application No /US2004/008540

	Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US	6121354	Α	19-09-2000	NONE		
EP	0540950	A	12-05-1993	JP DE DE EP KR US	5171035 A 69204022 D1 69204022 T2 0540950 A2 218208 B1 5367036 A	09-07-1993 14-09-1995 29-02-1996 12-05-1993 01-09-1999 22-11-1994
EP	0632077	Α	04-01-1995	EP JP	0632077 A2 7138551 A	04-01-1995 30-05-1995
US	5472785	A	05-12-1995	AU AU BR CA DE DE EP WO JP	681666 B2 6805294 A 9408561 A 2187524 A1 69408583 D1 69408583 T2 0755414 A1 9527748 A1 10500708 T	04-09-1997 30-10-1995 19-08-1997 19-10-1995 26-03-1998 04-06-1998 29-01-1997 19-10-1995 20-01-1998
WO	2004037883	Α	06-05-2004	US WO	2004079482 A1 2004037883 A1	29-04-2004 06-05-2004
DE	10056322	A ———	02-01-2003	DE	10056322 A1	02-01-2003