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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 February 2005 (10.02.2005)

PCT

(10) International Publication Number
WO 2005/012371 A3

(51) International Patent Classification[7]: C08F 10/00, 2/34, 4/654, 4/655

(21) International Application Number: PCT/US2004/010572

(22) International Filing Date: 7 April 2004 (07.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/469,663 12 May 2003 (12.05.2003) US
60/469,664 12 May 2003 (12.05.2003) US

(71) Applicant *(for all designated States except US)*: **UNION CARBIDE CHEMICALS & PLASTICS TECHNOLOGY CORPORATION** [US/US]; 39 Old Ridgebury Road, Danbury, CT 06817-0001 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **UPHAM, Stephanie, M.** [US/US]; 1915 Huber Road, Charleston, WV 25314 (US). **TURNER, Michael, D.** [US/US]; 603 Hawthorne Lane, Hurricane, WV 25526 (US). **KINNAN, Michael, A.** [US/US]; 101 McGovran Road, Apartment 1, Charleston, WV 25314 (US). **JORGENSEN, Robert, J.** [US/US]; 38 Bunker Drive, Belle Mead, NJ 08502 (US).

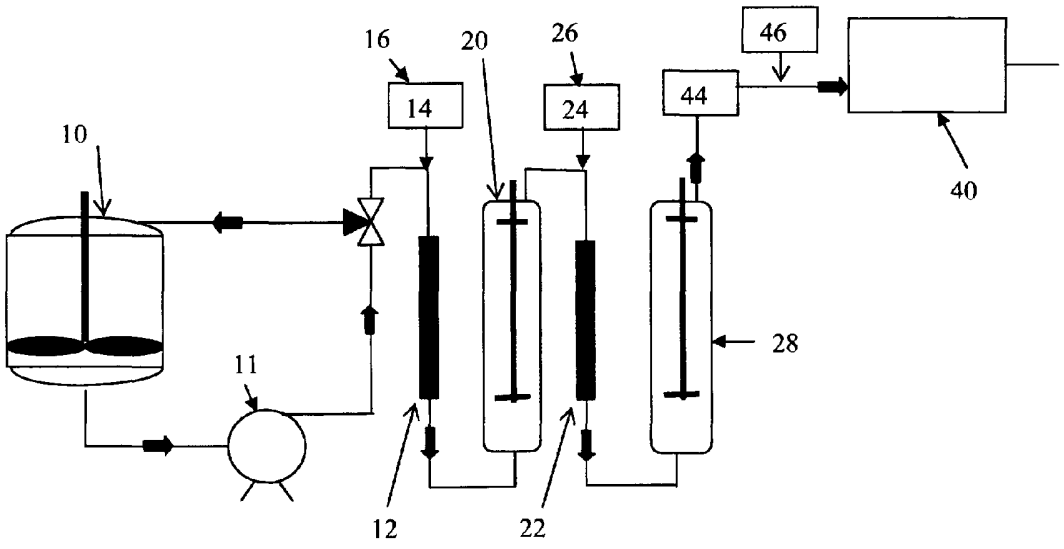
(74) Agent: **DELINE, Douglas, N.**; The Dow Chemical Company, Intellectual Property Section, P.O. Box 1967, Midland, MI 48674-1967 (US).

(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,

[Continued on next page]

(54) Title: PROCESS FOR CONTROL OF POLYMER FINES IN A GAS-PHASE POLYMERIZATION



(57) Abstract: A gas phase polymerization process comprising: (1) preparing a solution of a catalyst precursor comprising a mixture of magnesium and titanium compounds, an electron donor and a solvent; (2) adding a filler to the solution from step (1) to form a slurry; (3) spray drying the slurry from step (2) at a temperature of 100 to 140 °C to form a spray dried precursor; (4) slurring the spray dried precursor from step (3) in mineral oil, (5) partially or fully pre-activating the catalyst precursor by contacting the slurry of (4) with one or more Lewis Acids, and (6) transferring the partially or fully activated precursor from step (5) into a gas phase reactor in which an olefin polymerization reaction is in progress.

WO 2005/012371 A3

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:
6 May 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

International Application No
PCT/US2004/010572

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C08F10/00 C08F2/34 C08F4/654 C08F4/655

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 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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 783 007 A (UNION CARBIDE CHEMICALS & PLASTICS TECHNOLOGY CORPORATION) 9 July 1997 (1997-07-09) page 5 - page 9	1-11
X	WO 01/05845 A (UNION CARBIDE CHEMICALS & PLASTICS TECHNOLOGY CORPORATION) 25 January 2001 (2001-01-25) page 20 - page 35	1-11
X	US 5 290 745 A (JORGENSEN ET AL) 1 March 1994 (1994-03-01) cited in the application column 9 - column 12	1-11

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in 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	Date of mailing of the international search report
17 February 2005	04/03/2005

Name and mailing address of the ISA	Authorized officer
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	Parry, J

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/010572

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 6 187 866 B1 (JORGENSEN ROBERT JAMES ET AL) 13 February 2001 (2001-02-13) cited in the application column 12 - column 17	1-11
A	EP 1 285 934 A (NOVA CHEMICALS S.A) 26 February 2003 (2003-02-26) paragraph '0047!	1-11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US2004/010572

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0783007	A	09-07-1997	AU	708276 B2	29-07-1999
			AU	7653996 A	10-07-1997
			BR	9700007 A	10-11-1998
			CA	2193758 A1	05-07-1997
			EP	0783007 A2	09-07-1997
WO 0105845	A	25-01-2001	US	6617405 B1	09-09-2003
			AU	6096500 A	05-02-2001
			BR	0012428 A	02-04-2002
			CA	2378957 A1	25-01-2001
			EP	1200483 A1	02-05-2002
			JP	2003505541 T	12-02-2003
			WO	0105845 A1	25-01-2001
US 5290745	A	01-03-1994	AU	4451593 A	17-02-1994
			BR	9303323 A	22-03-1994
			CA	2103632 A1	11-02-1994
			CN	1085915 A	27-04-1994
			CZ	9301628 A3	16-02-1994
			EP	0584626 A2	02-03-1994
			FI	933505 A	11-02-1994
			HU	68489 A2	25-04-1995
			JP	7292031 A	07-11-1995
			NO	932833 A	11-02-1994
			PL	300014 A1	21-02-1994
			ZA	9305777 A	08-03-1994
US 6187866	B1	13-02-2001	AU	3647300 A	07-12-2000
			BR	0002576 A	02-01-2001
			CA	2311115 A1	04-12-2000
			EP	1057834 A1	06-12-2000
			JP	2001019707 A	23-01-2001
EP 1285934	A	26-02-2003	US	6825293 B1	30-11-2004
			BR	0203612 A	24-08-2004
			BR	0203850 A	20-05-2003
			CA	2397401 A1	20-02-2003
			CN	1406989 A	02-04-2003
			EP	1285934 A1	26-02-2003