(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 17 July 2008 (17.07.2008)

(10) International Publication Number WO 2008/084013 A3

(51) International Patent Classification: C08J 5/00 (2006.01) C08K 3/22 (2006.01) C08L 77/00 (2006.01)

(21) International Application Number:

PCT/EP2008/050062

(22) International Filing Date: 4 January 2008 (04.01.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

11 January 2007 (11.01.2007) 07100372.7 EP

(71) Applicant (for all designated States except US): BASF SE [DE/DE]; 67056 Ludwigshafen (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): JAIN, Sachin [IN/DE]; Leibnizstrasse 6, 68165 Mannheim (DE). GÖRTZ, Hans-Helmut [DE/DE]; Am Wurmberg 67251 Freinsheim (DE). GABRIEL, Claus [DE/DE]; Karlstrasse 39, 64347 Griesheim (DE). DESBOIS, Philippe [FR/DE]; Edistr. 22, 68535 Edingen-Neckarhausen (DE).

(74) Common Representative: BASF AKTIENGE-SELLSCHAFT; 67056 Ludwigshafen (DE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, 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: 5 March 2009

(54) Title: POLYAMIDE NANOCOMPOSITE

(57) Abstract: The invention relates to a nanocomposite which comprises a polyamide component (A) and a nanoparticulate component (B), wherein nanoparticulate component (B): a) is based on at least one oxide or mixed oxide/ oxide hydrate of one or more metals or half metals M, b) has a mean particle diameter of up to 10 nm, and c) is obtainable in a process comprising sol-gel synthesis that is carried out in the presence of an acid. The invention also relates to methods of making polyamide nanocomposites and to the use of nanoparticulate components to increase the flow of polyamide containing melts. The invention furthermore relates to molded parts made of the nanocomposite and to the use of a nanocomposite to produce thin-walled molded parts.





INTERNATIONAL SEARCH REPORT

International application No PCT/EP2008/050062

A. CLASSIFICATION OF SUBJECT MATTER INV. C08J5/00 C08L77/00

C08K3/22

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) C08J - C08K

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, COMPENDEX

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	
X	DE 10 2004 029303 A1 (EMS CHEMIE AG DOMAT EMS [CH]) 12 January 2006 (2006-01-12) cited in the application claims 1,9,11,12	1,5,6,8, 9,11,12	
Υ	example 3	4	
X .	JP 2003 073558 A (MITSUI CHEM INC) 12 March 2003 (2003-03-12) abstract	1,6,9	
Y	US 6 057 035 A (SINGH ANANT [US] ET AL) 2 May 2000 (2000-05-02) claims 1,2 column 6, line 24 - line 44	4	
-	-/		
	•		

X Further documents are listed in the continuation of Box C.	X 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 document, 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
11 December 2008	22/12/2008
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, Fax: (+31–70) 340–3016	Niaounakis, Michael

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/050062

	tion). DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with Indication, where appropriate, of the relevant passages	Relevant to claim No.
1	EP 1 695 995 A (DUTCH POLYMER INST [NL]) 30 August 2006 (2006-08-30) cited in the application claims 1,6,8	1
•	WO 2004/104082 A (INST NEUE MAT GEMEIN GMBH [DE]; MENNIG MARTIN [DE]; OLIVEIRA PETER WIL) 2 December 2004 (2004-12-02) cited in the application claims 1,5,8 page 3, paragraph 4 page 10, paragraph 4 page 11, paragraph 4	1
	•	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2008/050062

	tent document in search report		Publication date		Patent family member(s)	-	Publication date
DE	102004029303	A1	12-01-2006	NONE			
JP	2003073558	A	12-03-2003	NONE	arms and files grown remain stepes comes capes below brown bands and	_	*** *** *** *** *** *** *** *** *** **
US	6057035	Α	02-05-2000	WO	0170492	A1	27-09-2001
EP	1695995	Α	30-08-2006	WO	2006089676	Ä1	31-08-2006
WO	2004104082	A	02-12-2004	DE EP JP US	10323729 1631620 2007513207 2006089442	A2 T	16-12-2004 08-03-2006 24-05-2007 27-04-2006