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14 February 2013

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Previous Correction:

see Notice of 6 December 2012



WO 2012/102788 A3

(54) Title: ELASTOMERIC NANOCOMPOSITES, NANOCOMPOSITE COMPOSITIONS, AND METHODS OF MANUFACTURE

(57) Abstract: An elastomeric nanocomposite contains: (a) at least one elastomer comprising units derived from isoolefins having from 4 to 7 carbon atoms; (b) at least 10 phr of a carbon black; and (c) at least 1 phr of a nanoclay; wherein when the nanocomposite is used in an article, the article has a gas permeation coefficient of 80.0 cc*mm/[m²-day] at 40°C. The carbon black may be graphitized to reduce interactions between the carbon black and the nanoclays. The elastomeric nanocomposite may, with or without the use of the graphitized carbon black, be calendared or extruded in such a manner as to orient the nanoclay platelets within the composition such that the oriented nanoclay elastomer nanocomposite has an orientation parameter of greater than 0.15.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/063551

A. CLASSIFICATION OF SUBJECT MATTER
 INV. C08K3/00 C08K3/04 C08K3/34
 ADD. C08L23/22

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)
 C08K C08L

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 practicable, 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.
A	US 2007/238822 A1 (WANG HSIEN-CHANG [US] ET AL) 11 October 2007 (2007-10-11) paragraphs [0044], [0101] - [0121], [0125], [0129]; examples 1-5	1-16
A	US 2009/151839 A1 (MIYASAKA TAKASHI [JP] ET AL) 18 June 2009 (2009-06-18) paragraphs [0010], [0022], [0061]	1-16

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 application or patent 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 22 August 2012	Date of mailing of the international search report 18/12/2012
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Jansen, Reinier
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/063551

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. 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. 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 all searchable 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.:

1-16

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: 1-16

A nanocomposite according to claim 1, in which the carbon black is graphitised; the article of claim 7; the method of claim 9; the article of claim 15.

2. claims: 17-20

A nanocomposite according to claim 19, which is produced and oriented by calendaring or extruding; the method of claim 17 ; the article of claim 20.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2011/063551

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007238822 A1	11-10-2007	US 2007238822 A1	11-10-2007
		WO 2007117374 A1	18-10-2007

US 2009151839 A1	18-06-2009	NONE	
