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(54) Title: FUNCTIONALIZED OLEFIN INTERPOLYMERS, COMPOSITIONS AND ARTICLES PREPARED THEREFROM, AND METHODS FOR MAKING THE SAME

(57) Abstract: The invention provides compositions containing at least one functionalized polyolefin, and in particular, to compositions containing at least one functionalized ethylene interpolpolymer, which has a melt viscosity less than 50,000 cP at 350°F (177°C) and a molecular weight distribution (M_w/M_n) from about 1 to 5. The invention also provides adhesive formulations containing the same. The invention also relates to the preparation of the functionalized interpolpolymer s, by reacting, for example, such an ethylene interpolpolymer with the following: a) at least one unsaturated compound, containing at least one heteroatom, and b) at least one initiator.



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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/070876

A. CLASSIFICATION OF SUBJECT MATTER

INV. C09J151/06 C08F8/00 C08F255/00

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)

C09J 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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 183 493 A (MITSUI PETROCHEMICAL IND [JP]) 4 June 1986 (1986-06-04) example 3	1-35, 55-57
X	EP 0 818 525 A (DSM) 14 January 1998 (1998-01-14) example 15	1-35, 55-57
X	US 6 111 027 A (WRIGHT PAMELA J [US] ET AL) 29 August 2000 (2000-08-29) examples 1,2	1,55-57
P,X	WO 2007/008765 A (DOW GLOBAL TECHNOLOGIES INC [US]; YALVAC SELIM [US]; KARJALA TERESA P) 18 January 2007 (2007-01-18) cited in the application tables 1-11	1-35, 55-57

☐ 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 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

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Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/070876

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 allsearchable 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 reportcovers 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 - 35, 55 - 57

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: 1-35,55-57

relating to a composition or an article comprising
an ethylene interpolymer of a melt viscosity of <50.000 cP
and M.w./M.n. 1-5
functionalised with a heteroatom containing compound

2. claims: 36-41

relating to a process of treating an ethylene interpolymer
of M.w./M.n
.1-5 with a carbonyl group containing compound in the
presence of an initiator in a
ratio of 10:1-500:1

3. claim: 42

relating to a composition comprising an ethylene
interpolymer of a melt
viscosity of <50.000 cP and M.w./M.n .1-5 functionalised
with a carbonyl containing
compound

4. claim: 43

relating to a composition comprising a propylene
interpolymer of a melt
viscosity of <70.000 cP and M.w./M.n. 1-5 functionalised
with a heteroatom containing
compound

5. claims: 44-54

relating to a composition of a functionalised ethylene
interpolymer of
melt viscosity <50.000 cP and propylene interpolymer

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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