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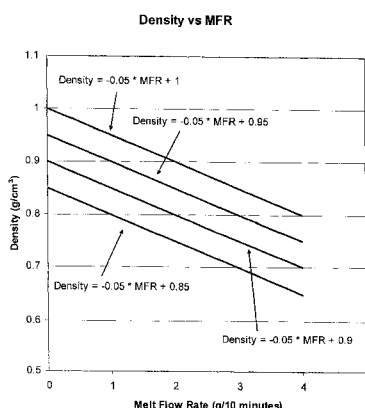
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(88) Date of publication of the international search report:  
9 April 2009

(54) Title: ADDITIVES FOR FOAMING POLYMERIC MATERIALS



(57) Abstract: A foaming additive and a catalyst additive may be used to foam polymeric materials having a low melt flow rate. The foaming additive may include a blowing agent and a hydrophilic component, and the catalyst additive may include a catalyst and a hydrophilic component. Since both the blowing agent and the catalyst are initially combined with a hydrophilic component, the blowing agent and the catalyst are able to find each other easier after being added to the polymeric materials. This makes it simple and economical to make low density foamed materials using polymeric materials having a low melt flow rate.

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/067659

A. CLASSIFICATION OF SUBJECT MATTER  
 INV. C08J9/00 C08J9/08

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

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, CHEM ABS Data, 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         | US 4 940 735 A (KRESS GERHARD [DE])<br>10 July 1990 (1990-07-10)<br>examples<br>claims 1-3                                     | 1-30                  |
| X         | US 2005/158381 A1 (ALDRITT MARY [US] ET AL)<br>21 July 2005 (2005-07-21)<br>paragraphs [0044] - [0046]; claim 1<br>claims 1,11 | 1-29                  |
| X         | US 5 905 098 A (WILKES GARY R [US] ET AL)<br>18 May 1999 (1999-05-18)<br>claim 1                                               | 1-29                  |



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.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

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27/01/2009

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2007/067659

## 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.:

1-30

### 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: 1-30

A catalyst additive comprising a catalyst and a hydrophilic dispersion, aid as defined in claim 1, and a method of producing a foamed material using said catalyst additive, as disclosed in claim 30.

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2. claims: 31,32

A foamed material prepared using a polymer having a MFR of no more than 4 g/10 minutes, as defined in claim 31.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/067659

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s)                        | Publication<br>date                    |
|-------------------------------------------|----|---------------------|---------------------------------------------------|----------------------------------------|
| US 4940735                                | A  | 10-07-1990          | DE 3810342 A1<br>EP 0335191 A2<br>ES 2054907 T3   | 05-10-1989<br>04-10-1989<br>16-08-1994 |
| US 2005158381                             | A1 | 21-07-2005          | CN 1909916 A<br>EP 1713492 A1<br>WO 2005072759 A1 | 07-02-2007<br>25-10-2006<br>11-08-2005 |
| US 5905098                                | A  | 18-05-1999          | NONE                                              |                                        |