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Published:

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(88) Date of publication of the international search report:
27 August 2009

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(54) Title: MIXTURES COMPRISING HYDROLYSIS RESISTANT ORGANOMODIFIED DISILOXANE IONIC SURFACTANTS

(57) Abstract: An asymmetric organomodified disiloxane surfactant having the formula: MM' wherein M comprises branched hydrocarbon substituents and M' comprises a cationic, anionic or zwitterionic substituent and a polyether substituent that may be combined as one moiety, wherein the disiloxane surfactant has an enhanced resistance to hydrolysis between a pH of about 3 to about 12.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A01N57/20 C07F7/08 B01F17/00 C08G77/388

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)
A01N C07F B01F C08G

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, BEILSTEIN 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	JP 08 257390 A (SANYO CHEMICAL IND LTD) 8 October 1996 (1996-10-08)	1-3,6-8, 11-13, 16-18, 21-23
Y	page 3, paragraphs 3,21; claim 1	1-25
X	JP 07 062102 A (KAO CORP) 7 March 1995 (1995-03-07)	1-3,6-8, 11-13, 16-18, 21-23
Y	pages 9-10; claim 1; compounds 1D-1F	1-25
X	JP 08 157336 A (KAO CORP) 18 June 1996 (1996-06-18)	1-3,6-8, 11-13, 16-18, 21-23
Y	page 11; claim 1; compounds 1C-1F	1-25

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[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 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
2 July 2009	10/07/2009

Name and mailing address of the ISA/	Authorized officer
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GOL'DIN G ET AL: "New Organosilicon Surfactants and Investigation of their Activity" RUSSIAN JOURNAL OF APPLIED CHEMISTRY, vol. 48, no. 2, 1 February 1975 (1975-02-01), pages 441-443, XP009114002 ISSN: 1070-4272 table 1	1-3,6-8, 11-13, 16-18, 21-23
Y	EP 0 367 381 A (DOW CORNING [GB]) 9 May 1990 (1990-05-09) claim 1	1-25
Y	US 2007/087937 A1 (LEATHERMAN MARK D [US] ET AL) 19 April 2007 (2007-04-19) claim 1	1-25
Y	EP 0 535 596 A (DOW CORNING [US]) 7 April 1993 (1993-04-07) claim 1	1-25

INTERNATIONAL SEARCH REPORT

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PCT/US2008/014066

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.:

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: 1-3, 6-8, 11-13, 16-18 and 21-23 (all in part.)

   related to the siloxanes of formula (R1)(R2)(R3)Si-O-Si(R4)(R5)(R6) wherein R1 is a hydrocarbon radical, R4 is R13RA and RA is SO3MK.

   ---

2. claims: 1-3, 6-8, 11-13, 16-18 and 21-23 (all in part.)

   related to the siloxanes of formula (R1)(R2)(R3)Si-O-Si(R4)(R5)(R6) wherein R1 is a hydrocarbon radical, R4 is R13RA and RA is C(=O)CH2CH(R15)CO2MK.

   ---

3. claims: 1-3, 6-8, 11-13, 16-18 and 21-23 (all in part.)

   related to the siloxanes of formula (R1)(R2)(R3)Si-O-Si(R4)(R5)(R6) wherein R1 is a hydrocarbon radical, R4 is R13RA and RA is PO3HMK.

   ---

4. claims: 1-3, 6-8, 11-13, 16-18 and 21-23 (all in part.)

   related to the siloxanes of formula (R1)(R2)(R3)Si-O-Si(R4)(R5)(R6) wherein R1 is a hydrocarbon radical, R4 is R13RA and RA is CO2MK.

   ---

5. claims: 1, 2, 4-7, 9-12, 14-17, 19-22, 24 and 25 (all in part.)

   related to the siloxane of formula (R1)(R2)(R3)Si-O-Si(R4)(R5)(R6) wherein R1 is a hydrocarbon radical, R4 is R14RC or R15RZ.

   ---

6. claims: 1-25 (all in part.)

   related to the siloxane of formula (R1)(R2)(R3)Si-O-Si(R4)(R5)(R6) wherein R1 is R8R9R10SiR12.

   ---

7. claims: 1-25 (all in part.)

   related to the siloxane of formula (R1)(R2)(R3)Si-O-Si(R4)(R5)(R6) wherein R1 is (R4R5R6)SiR12(Si(R2R3)SiO1/2)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2008/014066

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