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(54) Title: ASHLESS DETERGENTS AND FORMULATED LUBRICATING OIL CONTRAINING SAME

(57) Abstract: The present invention is directed to ashless detergents comprising the products resulting from the reaction of a salicylic acid, organic group substituted salicylic acid, sulfonic acid or organic groups substituted sulfur acid with thiadiazole or organic group substituted thiadiazole or an alkyl primary or secondary amine, and to formulated lubricating oils containing said ashless detergents.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER INV. C10M159/12 C10M135/10 C10M133/16 C10M135/36 C10M129/54 C10M133/04		
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) C10M C10L		
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, COMPENDEX, WPI Data, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 969 234 A (SCHIFF SIDNEY) 13 July 1976 (1976-07-13) column 1, line 16 - line 65	2,5-8, 15-23
Y	column 3, line 60 - column 4, line 10 column 6, line 64 - column 7, line 18; claims 1-14; examples I,II	1,3,4, 9-14,24, 25
X	GB 1 199 422 A (MONSANTO CO [US]) 22 July 1970 (1970-07-22)	2,5,6, 15-21
Y	page 4, line 8 - line 56 page 13, line 1 - line 18; claims 16-24	1,3,4, 9-14,24, 25
Y	US 2 862 883 A (JOHN HOUGHES ET AL) 2 December 1958 (1958-12-02) column 1, line 26 - line 50; claims 1-7 ----- -/--	1,3,9-11
☒ 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 20 October 2006		Date of mailing of the international search report 30/10/2006
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Glod, Guy

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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.
Y	US 5 171 861 A (ERNHOFFER ROBERT E [US] ET AL) 15 December 1992 (1992-12-15) column 1, line 7 - line 45; claims 1-11 -----	3,12-14
A	US 5 320 767 A (HABEEB JACOB J [US]) 14 June 1994 (1994-06-14) column 3, line 36 - column 4, line 11; claims 1-6 -----	1-25
A	US 5 330 666 A (HABEEB JACOB J [US]) 19 July 1994 (1994-07-19) column 3, line 41 - column 4, line 21; claims 1-5 -----	1-25
A	GB 2 235 695 A (SHELL INT RESEARCH [NL]) 13 March 1991 (1991-03-13) page 9, line 27 - page 10, line 6; claims 1-12 -----	1-25

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2006/021445

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3969234	A	13-07-1976	NONE	
GB 1199422	A	22-07-1970	DE 1745150 A1 SE 356054 B	29-07-1971 14-05-1973
US 2862883	A	02-12-1958	DE 1042808 B FR 1170861 A GB 797452 A NL 108234 C	06-11-1958 20-01-1959 02-07-1958
US 5171861	A	15-12-1992	NONE	
US 5320767	A	14-06-1994	NONE	
US 5330666	A	19-07-1994	NONE	
GB 2235695	A	13-03-1991	US 5089158 A	18-02-1992