

(19)



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(11)

EP 0 881 276 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
08.09.1999 Bulletin 1999/36

(43) Date of publication A2:
02.12.1998 Bulletin 1998/49

(21) Application number: **98304250.8**

(22) Date of filing: **29.05.1998**

(51) Int Cl.⁶: **C10M 129/10**, C10M 129/54,
C10M 135/10, C10M 135/30,
C10M 137/12, C10M 159/20,
C10M 159/22, C10M 159/24,
C07C 309/31
// C10N30:06

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **30.05.1997 JP 15788797**
31.03.1998 JP 10409098

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(54) **Lubricating oil composition containing a mixture of metal salts of aromatic organic acids**

(57) Lubricating oil composition containing an organic acid metal salt having excellent friction coefficient reducing effects.

A lubricating oil composition comprising a lubricating base stock and an effective amount of a mixture of metal salts of chain-hydrocarbon-group-substituted ar-

omatic organic acids. Each of the aromatic groups has been substituted by at least one chain hydrocarbon group. The sum of the number of chain hydrocarbon groups each carrying at C-2 or C-3 thereof the associated aromatic group bonded thereto is in a range of from 30% to 90% of the total number of the chain hydrocarbon groups.

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PARTIAL EUROPEAN SEARCH REPORT

Application Number

which under Rule 45 of the European Patent Convention EP 98 30 4250 shall be considered, for the purposes of subsequent proceedings, as the European search report

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP 0 765 930 A (EXXON CHEMICAL PATENTS INC) 2 April 1997 * page 2, line 1-9 * * page 3, line 15-45 * * page 4, line 41-47 * * examples 5-11 * * claims 1-10 * ---	1-10	C10M129/10 C10M129/54 C10M135/10 C10M135/30 C10M137/12 C10M159/20 C10M159/22 C10M159/24 C07C309/31 //C10N30:06
X	FR 2 381 004 A (AKZO NV) 15 September 1978 * page 1, line 1-2 * * page 1, line 25-33 * * page 3, line 10-14 * * page 3, line 22-39 * * page 4, line 12-40 * * page 5, line 17-27 * * page 6, line 5-18 * * examples 1-6 * ---	1-10	
X	GB 1 476 891 A (EXXON RESEARCH ENGINEERING CO) 16 June 1977 * page 1, line 29-77 * * page 2, line 45 - page 3, line 39 * * examples 1-4 * ---	1-10	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			C10M C07C
INCOMPLETE SEARCH The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims. Claims searched completely : Claims searched incompletely : Claims not searched : Reason for the limitation of the search: see sheet C			
Place of search		Date of completion of the search	Examiner
MUNICH		9 July 1999	Perakis, N
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C07)



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INCOMPLETE SEARCH
SHEET C

Application Number
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Claim(s) searched incompletely:
1-10

Reason for the limitation of the search:

The subject-matter of claim 1 contains (i) a definition of the salt which is very broad (cf. description page 5, line 12 to page 7, line 19) and (ii) an unusual parameter as distinguishing feature over the prior art (the sum of the number of chain hydrocarbon.....at least 30% of the total number of said chain hydrocarbon groups). The very broad definition of the salt in contrast to the technical evidence of the application which refers exclusively to calcium alkylbenzene sulfonates do not fulfil the requirements of Article 83 and 84 EPC since there is no sufficiency of disclosure and support in the application as originally filed. The unusual parameter renders meaningless the comparison of the claimed subject-matter with the state of the art which does not cite this parameter. Moreover there is no sufficiency of disclosure under Article 83 EPC for said parameter. Therefore no meaningful search can be carried out in the state of the art under Rule 45 EPC. The search has therefore been limited to metal salts of hydrocarbon substituted benzene sulfonates ignoring the limitation introduced by the unusual parameter.

PARTIAL EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	US 2 764 548 A (KING ORGANIC CHEMICAL INC) 25 September 1956 * column 1, line 11-40 * * column 1, line 70 - column 2, line 25 * * column 3, line 2-5 * * column 7, line 16-29 * * column 8, line 9-14 * ---	1-10	
X	GB 2 182 948 A (NIPPON OIL CO LTD) 28 May 1987 * abstract * * page 2, line 12-63 * ---	1-10	
X	US 4 792 410 A (SCHWIND JAMES J ET AL) 20 December 1988 * abstract * * examples 1-5 * -----	1-10	TECHNICAL FIELDS SEARCHED (Int.Cl.6)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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09-07-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0765930 A	02-04-1997	CA 2142322 A	03-03-1994
		DE 69313863 D	16-10-1997
		DE 69313863 T	22-01-1998
		WO 9404490 A	03-03-1994
		EP 0655054 A	31-05-1995
		ES 2107050 T	16-11-1997
		SG 48130 A	17-04-1998
		US 5684184 A	04-11-1997
		US 5789615 A	04-08-1998
FR 2381004 A	15-09-1978	BE 863376 A	27-07-1978
		CA 1103699 A	23-06-1981
		DE 2803420 A	31-08-1978
		FR 2381026 A	15-09-1978
		JP 1401385 C	28-09-1987
		JP 53095924 A	22-08-1978
		JP 62009093 B	26-02-1987
		JP 1493430 C	20-04-1989
		JP 62167753 A	24-07-1987
GB 1476891 A	16-06-1977	JP 63040781 B	12-08-1988
		FR 2263026 A	03-10-1975
		FR 2278387 A	13-02-1976
		BE 826404 A	08-09-1975
		CA 1035236 A	25-07-1978
		DE 2510115 A	18-09-1975
		JP 1287976 C	14-11-1985
		JP 50131881 A	18-10-1975
		JP 60012891 B	04-04-1985
US 2764548 A	25-09-1956	NL 7502599 A,B,	10-09-1975
		SU 1519525 A	30-10-1989
		US 4140642 A	20-02-1979
GB 2182948 A	28-05-1987	JP 62084190 A	17-04-1987
		DE 3634078 A	07-05-1987
US 4792410 A	20-12-1988	AT 66487 T	15-09-1991
		AU 600791 B	23-08-1990
		AU 1088688 A	15-07-1988
		CA 1295318 A	04-02-1992
		DE 3772383 A	26-09-1991
		DK 462788 A	18-08-1988
		EP 0294458 A	14-12-1988
		FI 883860 A	19-08-1988

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 30 4250

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

09-07-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4792410 A		IN 170459 A	28-03-1992
		JP 2532638 B	11-09-1996
		JP 1501801 T	22-06-1989
		NO 174429 B	24-01-1994
		WO 8804684 A	30-06-1988
		ZA 8709517 A	16-06-1988

EPO FORM P0459

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