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(54) **Friction modifier comprising metal sulfonate and lubricating oil composition containing the same**

(57) Metal sulfonates having friction reducing ability and also various lubricating oil compositions containing the metal sulfonates are disclosed. The metal sulfonates which provide a friction modifier comprise a metal sulfonate composed of an organic sulfonic group, which contains a hydrocarbon group, and a metal. The hydrocarbon group of the organic sulfonic group is a

chain hydrocarbon group or an aromatic group with at least one chain hydrocarbon group bonded thereto. The chain hydrocarbon group has an alkyl chain linearity of 20% or higher as determined by a carbon nuclear magnetic resonance measurement (¹³C-NMR measurement). Lubricating oil compositions added with the metal sulfonate are also provided.

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PARTIAL EUROPEAN SEARCH REPORT

Application Number

which under Rule 45 of the European Patent Convention EP 98 30 4251 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	US 4 225 446 A (ARNOLD JERRY D ET AL) 30 September 1980 * column 1, line 6-17 * * column 1, line 26-45 * * example 1 * ---	1-9	C10M135/10 C10M159/24 //C10N30:06
X	EP 0 312 313 A (EXXON CHEMICAL PATENTS INC) 19 April 1989 * abstract * * page 2, line 2-4 * * page 2, line 25-33 * * page 3, line 34-42 * * page 3, line 53-58 * * page 4, line 29-43 * * page 5, line 29-35 * * page 5, line 50-51 * * examples 1-4,7,8,19 * ---	1-9	
X	GB 2 182 948 A (NIPPON OIL CO LTD) 28 May 1987 * abstract * * page 2, column 12-63 * ---	1-9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			C10M
<p>INCOMPLETE SEARCH</p> <p>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.</p> <p>Claims searched completely :</p> <p>Claims searched incompletely :</p> <p>Claims not searched :</p> <p>Reason for the limitation of the search: see sheet C</p>			
Place of search MUNICH		Date of completion of the search 12 July 1999	Examiner Perakis, N
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p>		<p>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</p>	

EP-FORM 1503 03 82 (P04t.07)



Claim(s) searched incompletely:
1-9

Reason for the limitation of the search:

Unusual parameter

The claimed subject-matter is defined by the use of an unusual parameter, i.e. "said chain hydrocarbon group has an alkyl chain linearity of 20% or higher as determined by a carbon nuclear magnetic resonance measurement (¹³C-NMR measurement)".

The use of this unusual parameter renders a meaningful comparison of the claimed subject-matter with the prior art impossible under Rule 45 EPC. Moreover, the application does not contain a disclosure of how such linearity is achieved by the applicant; there is no disclosure of the process of preparation of the metal sulfonates claimed which leads to the objected unusual parameter. Therefore, this objected feature is a desideratum feature which lacks support and disclosure under Article 83 EPC.

A partial search has been carried out for all claims, whereby the objectionable feature (unusual parameter has not been taken into consideration).



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PARTIAL EUROPEAN SEARCH REPORT

Application Number
EP 98 30 4251

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
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EPO FORM 1503 03.82 (P/94C10)

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

EP 98 30 4251

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 above-mentioned patent documents. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

12-07-1999

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82