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(71) Applicant: **Chevron Japan Ltd.**
10th Floor, 1-1 Kanda, Suda-cho
Chiyoda-ku,
Tokyo 101-0041 (JP)

(72) Inventors:
• **Takeuchi, Yoshitaka**
Haibara-gun, Shizuoka (JP)
• **Yamashita, Yoshito**
Omaezaki-shi, Shizuoka (JP)
• **Nakazato, Morikuni**
Omaezaki-shi, Shizuoka (JP)

(74) Representative: **Nash, David Allan**
Haseltine Lake LLP
Redcliff Quay
120 Redcliff Street
Bristol
BS1 6HU (GB)

(54) **A method of improving the acrylic rubber sealant compatability in an internal combustion engine**

(57) It has been discovered that a lubricating oil composition containing a certain combination of a nitrogen-containing dispersant and a metal-containing detergent of an alkali metal salt of alkylphenol derivative having a Mannich base structure, together with a phosphorus-containing organic compound, can be effectively employed in a method for improving the acrylic rubber seal-

ant compatibility in an internal combustion engine, if the ratio of the nitrogen-containing dispersant and a metal-containing detergent of an alkali metal salt of alkylphenol derivative having a Mannich base structure is adjusted to a specific range, i.e., in the range of from 1:0.005 to 1:2 in terms of the nitrogen content.

EP 1 803 797 A3



EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 1 452 581 A2 (CHEVRON ORONITE TECHNOLOGY B V [NL]) 1 September 2004 (2004-09-01) * paragraph [0001] * * paragraph [0067] - paragraph [0078]; claims *	1-15	INV. C10M163/00 C10M159/16 ADD. C10N40/25
Y,D	EP 1 167 497 A2 (CHEVRON ORONITE JAPAN LTD [JP]) 2 January 2002 (2002-01-02) * paragraph [0030] - paragraph [0035]; claims; example 4 *	1-15	
A	US 2004/102335 A1 (CARRICK VIRGINIA A [US] ET AL) 27 May 2004 (2004-05-27) * paragraph [0162] - paragraph [0176] *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			C10M
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		18 June 2010	Glod, Guy
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			

2

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

EP 06 25 6586

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
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18-06-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1452581	A2	01-09-2004	CA 2457082 A1	27-08-2004
			JP 2004256817 A	16-09-2004
			SG 135942 A1	29-10-2007
			US 2004171501 A1	02-09-2004

EP 1167497	A2	02-01-2002	CA 2349411 A1	02-12-2001
			DE 01304885 T1	15-07-2004
			SG 115379 A1	28-10-2005
			US 2002019320 A1	14-02-2002

US 2004102335	A1	27-05-2004	AT 463553 T	15-04-2010
			AU 2003302425 A1	18-06-2004
			CA 2506632 A1	10-06-2004
			EP 1587902 A1	26-10-2005
			JP 2006507394 T	02-03-2006
			WO 2004048503 A1	10-06-2004
