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(54) **Power transmission fluids with enhanced extreme pressure and antiwear characteristics**

(57) A fluid composition is described for extreme pressure applications. The fluid composition includes a base oil, and an additive composition comprising sulfurized fatty oil in an amount sufficient to provide at least 1,000 ppm sulfur to the fluid composition, and dialkyl thiadiazole in an amount sufficient to provide at least 500 ppm sulfur to the fluid composition. Fluids containing

these respective amounts of sulfurized fatty oil and dialkyl thiadiazole exhibit failure loads which equal or exceed 794 kg (1750 pounds) at 100°C and 150°C, respectively, as measured according to a Falex EP test of ASTM D-3233.

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EUROPEAN SEARCH REPORT

Application Number
EP 05 01 2489

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 231 256 A (ETHYL CORP [US]) 14 August 2002 (2002-08-14) * paragraphs [0003], [0012] - [0021], [0023] - [0032], [0078] - [0087] * * claims; examples *	1-35	INV. C10M141/08 ADD. C10M135/06 C10M135/36 C10N40/04
X	EP 0 280 580 A (EXXON CHEMICAL PATENTS INC [US]) 31 August 1988 (1988-08-31) * page 2, line 57 - line 61 * * page 3, line 4 - line 9 * * page 3, line 54 - line 65 * * page 4, line 23 - line 34 * * page 6, line 58 - line 60 * * page 7, line 11 - line 12 * * page 7, line 14 - line 15 * * page 7, line 24 - line 35 * * example 4; tables 1,2 * * claims 1,6,11,14 *	1,5-12, 14-19, 22,26-32	
X	EP 1 428 866 A (NIPPON OIL CORP [JP]) 16 June 2004 (2004-06-16) * paragraphs [0002] - [0004], [0010], [0064] - [0073], [0099] - [102.132], [0133] - [0136] * * claims 1,5,6; examples 1,7 *	1-35	TECHNICAL FIELDS SEARCHED (IPC) C10M
2 The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 May 2009	Examiner Keipert, Olaf
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	

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**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.
The members are as contained in the European Patent Office EDP file on
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13-05-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1231256 A	14-08-2002	JP 2002275490 A	25-09-2002
		US 2002151443 A1	17-10-2002

EP 0280580 A	31-08-1988	AR 244317 A1	29-10-1993
		AU 603186 B2	08-11-1990
		AU 1235188 A	01-09-1988
		BR 8800835 A	04-10-1988
		CA 1306741 C	25-08-1992
		DE 3875630 D1	10-12-1992
		DE 3875630 T2	18-03-1993
		DK 103788 A	28-08-1988
		ES 2045102 T3	16-01-1994
		JP 2505019 B2	05-06-1996
		JP 63304096 A	12-12-1988
		MX 170110 B	09-09-1993
		NO 880846 A	29-08-1988
		SG 50093 G	25-06-1993
		ZA 8801262 A	22-08-1988

EP 1428866 A	16-06-2004	CN 1653167 A	10-08-2005
		WO 03025104 A1	27-03-2003
		JP 2003082377 A	19-03-2003
		US 2004171500 A1	02-09-2004
