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- (54) Lubricant oil composition with reduced friction coefficient

(57) A lubricant oil composition produced by blending (A) a molybdenum-containing friction conditioner, (B) a boron-containing compound and (C) an antioxidant if necessary, with a lubricant base oil, wherein the content of the molybdenum derived from the molybdenum-containing friction conditioner is 100 to 2,000 ppm (as the ratio by weight) and the content of the boron derived from the boron-containing compound is 0.015% by weight or more, to the total weight of the composition.

The lubricant oil compositions of the present invention are the lubricant oil compositions blended with a molybdenum-containing friction conditioner and a boron-containing compound, and are capable of decreasing coking deposit in internal combustion engines such as automobile engines, which is advantageous for sustaining a fuel-efficiency property for a long term. Hence, the compositions can be used preferably for automobile lubricant oils.



## **EUROPEAN SEARCH REPORT**

Application Number EP 96 30 2490

DOCUMENTS CONSIDERED TO BE RELEVANT  Citation of document with indication, where appropriate, Relevant				CLASSIFICATION OF THE	
Category	of relevant pas		to claim	APPLICATION (Int.Cl.6)	
X	EP-A-0 562 172 (IDE September 1993 * page 5; table 1 *	MITSU KOSAN CO LTD) 29	1-6	C10M141/12 //(C10M141/12, 135:18,135:30, 139:00), C10N30:06	
X	EP-A-0 609 623 (ORO August 1994 * page 7, line 51 -	ŕ	1-6		
Ρ,Χ	WO-A-96 06904 (TONE ENGINEERING CO (US) March 1996 * page 21; example	N CORP ;EXXON RESEARCH ; YAMADA MICHIYA (JP) 7	1-6		
X	PATENT ABSTRACTS OF vol. 012, no. 117 ( & JP-A-62 240388 (A KK;OTHERS: 01), 21 * abstract *	C-487), 13 April 1988 SAHI DENKA KOGYO	1-3,5,6		
Υ	P-A-0 281 992 (IDEMITSU KOSAN KK) 14 eptember 1988 claim 12; table 1 *		1-6	TECHNICAL FIELDS SEARCHED (Int.Cl.6)	
Υ	October 1993	A-93 21289 (EXXON CHEM PATENTS INC) 28 cober 1993 cage 24 - page 27; examples 1-7 *		CION	
E	WO-A-96 19551 (EXXO 1996 * page 11; table 1	N RES & ENG CO) 27 June * 	1-3,5,6		
	The present search report has b	een drawn up for all claims			
Place of search Date of completion of the search				Examiner	
MUNICH 14 November 1996		Kazemi, P			
X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background  E: earlier patent do after the filing d D: document cited if			n the application		