

(19)



(11)

EP 2 290 041 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:

16.03.2011 Bulletin 2011/11

(43) Date of publication A2:

02.03.2011 Bulletin 2011/09

(51) Int Cl.:

C10M 133/56 (2006.01) *C10N 10/04* (2006.01)
C10N 30/10 (2006.01) *C10N 30/12* (2006.01)
C10N 40/25 (2006.01) *C10N 40/26* (2006.01)
C10N 70/00 (2006.01) *C10N 60/14* (2006.01)

(21) Application number: **10171303.0**

(22) Date of filing: **29.07.2010**

(84) Designated Contracting States:

**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO SE SI SK SM TR**

Designated Extension States:

BA ME RS

(30) Priority: **14.10.2009 GB 0917982**

24.08.2009 EP 09010813

(71) Applicant: **Infineum International Limited**

**Abingdon,
Oxfordshire OX13 6BB (GB)**

(72) Inventors:

- **McTavish, Stuart James**
Abingdon, Oxfordshire OX13 6BB (GB)
- **Strickland, Keith**
Abingdon, Oxfordshire OX13 6BB (GB)
- **Shaw, Robert**
Abingdon, Oxfordshire OX13 6BB (GB)

(74) Representative: **Goddard, Frances Anna et al**

**PO Box 1
Milton Hill
Abingdon, Oxfordshire OX13 6BB (GB)**

(54) **A lubricating oil composition**

(57) A lubricating oil composition comprising: (A) an oil of lubricating viscosity in a major amount, comprising a Group III base stock; (B) as an additive component in a minor amount, an oil-soluble boron containing compound; and, wherein the lubricating oil composition is

contaminated with at least 0.3 mass %, based on the total mass of the lubricating oil composition, of a biofuel or a decomposition product thereof and mixtures thereof.

EP 2 290 041 A3



EUROPEAN SEARCH REPORT

Application Number
EP 10 17 1303

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	WO 2008/117776 A1 (IDEMITSU KOSAN CO [JP]; TESHIMA KAZUHIRO [JP]; KAMANO HIDEKI [JP]) 2 October 2008 (2008-10-02) * the whole document * -& EP 2 141 220 A1 (IDEMITSU KOSAN CO [JP]) 6 January 2010 (2010-01-06) * claim 1 * * pages 11-14; examples 1-9 * * page 8, paragraph 40 - page 10, paragraph 45 * * page 3, paragraphs 7,10 * -----	13,14	INV. C10M133/56 ADD. C10N10/04 C10N30/10 C10N30/12 C10N40/25 C10N40/26 C10N70/00 C10N60/14
X	WO 2009/054322 A1 (IDEMITSU KOSAN CO [JP]; TESHIMA KAZUHIRO [JP]; ISHIKAWA MOTOHARU [JP]) 30 April 2009 (2009-04-30) * abstract * * page 19; table 1 * * claim 1 * -----	13,14	
X	EP 2 055 761 A2 (CHEVRON ORONITE CO [US]) 6 May 2009 (2009-05-06) * claims 1,2,10-14, 18 * * page 17; table 3 * * page 15 - paragraph 92-97 * * page 12 - paragraph 77 * * page 11 - paragraph 70 * * page 5 - paragraph 29 * -----	1-8, 10-15	TECHNICAL FIELDS SEARCHED (IPC) C10M
A	US 5 262 140 A (INOUE KIYOSHI [JP]) 16 November 1993 (1993-11-16) * abstract * * column 1, lines 17-23 * ----- -/--	1-8, 10-15	
2 The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 7 February 2011	Examiner Greß, Tobias
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 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 10 17 1303

DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)	
A	EP 2 055 762 A2 (CHEVRON ORONITE CO [US]) 6 May 2009 (2009-05-06) * page 5 - paragraph 31 * * page 13, paragraph 87 - page 14, paragraph 98 * * claims 1,13,19 *	1-8, 10-15		
A	WO 2009/085943 A1 (LUBRIZOL CORP [US]; ADAMCZEWSKA JOLA [GB]; DAVIES MARK C [GB]; JONES C) 9 July 2009 (2009-07-09) * abstract * * page 17, paragraph 66 - page 18, paragraph 67 * * claims 1-25 *	1-8, 10-15		
X	US 5 739 088 A (INOUE KIYOSHI [JP] ET AL) 14 April 1998 (1998-04-14) * the whole document *	1,2,7,10		
A	EP 1 318 188 A1 (INFINEUM INT LTD [GB]) 11 June 2003 (2003-06-11) * page 1, paragraph 6 * * page 9, paragraph 62 *	1-8, 10-15		TECHNICAL FIELDS SEARCHED (IPC)
A	US 3 829 381 A (LE SUER W) 13 August 1974 (1974-08-13) * column 1, lines 29-33 *	1-8, 10-15		
X	US 2006/073990 A1 (WINEMILLER MARK D [US] ET AL) 6 April 2006 (2006-04-06) * page 1, paragraph 2 * * claims 1-6 *	13,14		
The present search report has been drawn up for all claims				
Place of search Munich		Date of completion of the search 7 February 2011	Examiner Greß, Tobias	
<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>				

2
EPO FORM 1503 03.82 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 10 17 1303

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	<p>CHOUDHARY R B ET AL: "Lubrication potential of boron compounds: An overview", LUBRICATION SCIENCE, LEAF COPPIN PUBLISHING LTD, US LNKD-DOI:10.1002/LS.3010140208, vol. 14, no. 2, 1 February 2002 (2002-02-01), pages 211-222, XP007915059, ISSN: 0954-0075 [retrieved on 2006-03-07]</p> <p>* pages 211-213 *</p> <p>* page 221 *</p> <p style="text-align: center;">-----</p>	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 7 February 2011	Examiner Greß, Tobias
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone</p> <p>Y : particularly relevant if combined with another document of the same category</p> <p>A : technological background</p> <p>O : non-written disclosure</p> <p>P : intermediate document</p>		<p>T : theory or principle underlying the invention</p> <p>E : earlier patent document, but published on, or after the filing date</p> <p>D : document cited in the application</p> <p>L : document cited for other reasons</p> <p>.....</p> <p>& : member of the same patent family, corresponding document</p>	

2

EPO FORM 1503 03.82 (P04C01)



Application Number

EP 10 17 1303

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
EP 10 17 1303

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-8, 13-15(completely); 10-12(partially)

Use of an oil-soluble boron containing compound to reduce and/or inhibit corrosion, lubricating oil composition comprising said boron containing compound, and method of lubricating a spark-ignited or compression-ignited internal combustion engine with said lubricating oil composition.

2. claims: 9(completely); 10-12(partially)

Use of an oil-soluble boron containing compound to reduce and/or inhibit oxidation.

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

EP 10 17 1303

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.

07-02-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2008117776 A1	02-10-2008	CN 101646757 A	10-02-2010
		EP 2141220 A1	06-01-2010
		KR 20090125845 A	07-12-2009
		US 2010113313 A1	06-05-2010
EP 2141220 A1	06-01-2010	CN 101646757 A	10-02-2010
		WO 2008117776 A1	02-10-2008
		KR 20090125845 A	07-12-2009
		US 2010113313 A1	06-05-2010
WO 2009054322 A1	30-04-2009	CN 101835880 A	15-09-2010
		EP 2223992 A1	01-09-2010
		JP 2009102486 A	14-05-2009
		KR 20100087722 A	05-08-2010
		US 2010218740 A1	02-09-2010
EP 2055761 A2	06-05-2009	CA 2641002 A1	30-04-2009
		JP 2009108320 A	21-05-2009
		SG 152193 A1	29-05-2009
		US 2009111721 A1	30-04-2009
US 5262140 A	16-11-1993	US 5380508 A	10-01-1995
EP 2055762 A2	06-05-2009	CA 2640984 A1	26-04-2009
		JP 2009108317 A	21-05-2009
		SG 152192 A1	29-05-2009
		US 2009111720 A1	30-04-2009
WO 2009085943 A1	09-07-2009	CA 2710250 A1	09-07-2009
		CN 101960002 A	26-01-2011
		EP 2245124 A1	03-11-2010
		US 2010286002 A1	11-11-2010
US 5739088 A	14-04-1998	NONE	
EP 1318188 A1	11-06-2003	CA 2413685 A1	06-06-2003
		CN 1422941 A	11-06-2003
		JP 2003193078 A	09-07-2003
		SG 126712 A1	29-11-2006
		US 2003148897 A1	07-08-2003
US 3829381 A	13-08-1974	NONE	
US 2006073990 A1	06-04-2006	CA 2472303 A1	07-08-2003
		EP 1472331 A1	03-11-2004
		JP 2005516110 T	02-06-2005

EPO FORM P0459

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

