

Title (en)

LOW SAP ENGINE LUBRICANT ADDITIVE AND COMPOSITION CONTAINING NON-CORROSIVE SULFUR COMPOUND AND ORGANIC BORATES

Title (de)

LOW-SAP-MOTORSCHMIERMITTELZUSATZ UND ZUSAMMENSETZUNG MIT NICHT-KORROSIVER SCHWEFELVERBINDUNG UND ORGANISCHEN BORATEN

Title (fr)

ADDITIF ET COMPOSITION LUBRIFIANTES POUR MOTEUR À FAIBLE TAUX DE SOUFRE, DE CENDRE ET DE PHOSPHORE CONTENANT UN COMPOSÉ SOUFRÉ NON CORROSIF ET DES BORATES ORGANIQUES

Publication

EP 2010636 B1 20150708 (EN)

Application

EP 07775190 A 20070410

Priority

- US 2007008946 W 20070410
- US 79177506 P 20060413
- US 73188007 A 20070330

Abstract (en)

[origin: WO2007120712A2] The present invention is directed to a lubricating oil composition comprising a lubricating oil basestock, a boron-containing additive of at least 0.1 weight percent of the composition and less than 8.0 weight percent, and ashless sulfur additive of at least 0.1 weight percent of the composition and less than 4.0 weight percent, a dispersant- detergent-inhibitor system of less than 15 percent weight percent of the composition, a zinc dithiophosphate additive of at least 0.2 weight percent of the composition and less than 2.0 weight percent of the composition. The elements in the formulated oil composition having at least 100 and less than 630 PPM phosphorus, at least 1,000 PPM and less than 3,000 PPM, at least 100 and less than 630 ppm Phosphorous, and at least 105 PPM and less than 710 PPM zinc. In a second embodiment, an additive composition for lubricating oils is disclosed. In a third embodiment, a method to obtain favorable lubricating properties is disclosed.

IPC 8 full level

C10M 141/12 (2006.01)

CPC (source: EP US)

C10M 141/12 (2013.01 - EP US); **C10M 2203/1006** (2013.01 - EP US); **C10M 2203/1025** (2013.01 - EP US); **C10M 2205/0285** (2013.01 - EP US); **C10M 2205/173** (2013.01 - EP US); **C10M 2207/026** (2013.01 - EP US); **C10M 2207/289** (2013.01 - EP US); **C10M 2215/064** (2013.01 - EP US); **C10M 2215/086** (2013.01 - EP US); **C10M 2215/28** (2013.01 - EP US); **C10M 2217/043** (2013.01 - EP US); **C10M 2219/024** (2013.01 - EP US); **C10M 2219/06** (2013.01 - EP US); **C10M 2219/066** (2013.01 - EP US); **C10M 2219/08** (2013.01 - EP US); **C10M 2219/083** (2013.01 - EP US); **C10M 2219/104** (2013.01 - EP US); **C10M 2219/106** (2013.01 - EP US); **C10M 2223/045** (2013.01 - EP US); **C10M 2227/061** (2013.01 - EP US); **C10M 2227/062** (2013.01 - EP US); **C10N 2010/04** (2013.01 - EP US); **C10N 2010/12** (2013.01 - EP US); **C10N 2030/04** (2013.01 - EP US); **C10N 2030/06** (2013.01 - EP US); **C10N 2030/10** (2013.01 - EP US); **C10N 2030/12** (2013.01 - EP US); **C10N 2030/42** (2020.05 - EP US); **C10N 2030/43** (2020.05 - EP US); **C10N 2030/44** (2020.05 - EP US); **C10N 2030/45** (2020.05 - EP US); **C10N 2040/25** (2013.01 - EP US); **C10N 2060/14** (2013.01 - EP US)

Citation (opposition)

Opponent : Afton Chemical Corporation

- EP 1104800 A2 20010606 - ORONITE JAPAN LTD [JP]
- JP 2004149762 A 20040527 - COSMO SEKIYU LUBRICANTS KK
- JP 2001031984 A 20010206 - IDEMITSU KOSAN CO
- US 2006025313 A1 20060202 - BOFFA ALEXANDER B [US]
- KR 20030005588 A 20030123 - HYUNDAI MOTOR CO LTD [KR]
- US 2004242433 A1 20041202 - ROBY STEPHEN H [US], et al
- US 2002098990 A1 20020725 - NAKAZATO MORIKUNI [JP], et al
- US 2004102336 A1 20040527 - BOFFA ALEXANDER B [US]
- US 2005222447 A1 20051006 - BARANSKI JOHN R [US], et al
- EP 1306370 A1 20030502 - ETHYL CORP [US]
- EP 0814148 A2 19971229 - ORONITE JAPAN LIMITED [JP]
- JP 2006016453 A 20060119 - NIPPON OIL CORP
- US 2003216266 A1 20031120 - HIRANO SATOSHI [US], et al
- US 5629272 A 19970513 - NAKAZATO MORIKUNI [JP], et al
- US 4648985 A 19870310 - THORSELL PAUL W [US], et al
- US 3876550 A 19750408 - HOLUBEC ZENOWIE MICHAEL
- ENGLISH LANGUAGE TRANSLATION OF D2
- ENGLISH LANGUAGE ABSTRACT OF D3
- ENGLISH LANGUAGE MACHINE TRANSLATION OF D3
- ENGLISH LANGUAGE ABSTRACT OF D5
- ENGLISH LANGUAGE MACHINE TRANSLATION OF D5
- XU ET AL., WEAR, vol. 241, 2000, pages 41 - 46
- YAO ET AL., LUBRICATING OIL, vol. 21, no. 2, April 2006 (2006-04-01)
- ENGLISH LANGUAGE TRANSLATION OF D10
- HUANG ET AL., TRIBOLOGICAL INTERNATIONAL, vol. 37, 2004, pages 71 - 76
- HUANG ET AL., TRIBOLOGICAL INTERNATIONAL, vol. 35, 2002, pages 787 - 791
- ENGLISH TRANSLATION OF D16
- MORTIER ET AL., EXTRACT FROM CHEMISTRY AND TECHNOLOGY OF LUBRICANTS TEXTBOOK, 1997, pages 86
- "Advent of Modern Hydroprocessing - The Evolution of Base Oil Technology", MACHINERY LUBRICATION, May 2003 (2003-05-01)
- "Special Report: Additive challenges in meeting new automotive engine specifications", TRIBOLOGY ET LUBRICATION TECHNOLOGY, September 2006 (2006-09-01)
- BEYOND ZDDP, LUBRICATION SCIENCE, vol. 20, 2008, pages 77 - 78
- STEPINA ET AL., EXTRACT FROM LUBRICANTS AND SPECIAL FLUIDS TEXTBOOK, 1992, pages 383 - 391
- MORTIER ET AL., EXTRACT FROM CHEMISTRY AND TECHNOLOGY OF LUBRICANTS TEXTBOOK, 1997, pages 332 - 343

- CHOUDHARY ET AL.: "lubrication potential of boron compounds an overview", LUBRICATION SCIENCE, February 2002 (2002-02-01), pages 14 - 2, XP007915059
- "Symposium on Recent Advances in Chemistry of Lubricant Additives", 218TH NATIONAL MEETING, AMERICAN CHEMICAL SOCIETY, 22 August 1999 (1999-08-22), New Orleans, LA, XP055272507

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

DOCDB simple family (publication)

WO 2007120712 A2 20071025; WO 2007120712 A3 20080221; CA 2648220 A1 20071025; EP 2010636 A2 20090107;
EP 2010636 B1 20150708; JP 2009533528 A 20090917; JP 5555487 B2 20140723; US 2008171677 A1 20080717

DOCDB simple family (application)

US 2007008946 W 20070410; CA 2648220 A 20070410; EP 07775190 A 20070410; JP 2009505459 A 20070410; US 73188007 A 20070330