Title (en)

LUBRICATING OIL COMPOSITION FOR INTERNAL COMBUSTION ENGINES

Title (de)

SCHMIERMITTELZUSAMMENSETZUNG FÜR VERBRENNUNGSMOTOREN

Title (fr)

COMPOSITION LUBRIFIANTE POUR UN MOTEUR À COMBUSTION INTERNE

Publication

EP 1757673 A1 20070228 (EN)

Application

EP 05255181 A 20050823

Priority

EP 05255181 A 20050823

Abstract (en)

The present invention relates to a low phosphorus lubricating oil composition for internal combustion engines which demonstrates fuel economy benefits while also providing high temperature oxidation, piston deposits, and wear. The lubricating oil composition of the present invention comprises: a) major amount of a base oil of lubricating viscosity; b) from about 0.1 to 10 wt % of an overbased alkaline earth metal alkyl aryl sulfonate detergent having a total base number (TBN) of about 25 to 500; c) from about 0.02 to 10 wt % of a oxymolybdenum-containing complex; d) from about 0.1 to 5 wt % of a friction modifier; and e) from about 0.2 to 10 wt % of an antioxidant selected from the group consisting of a diphenylamine type, a sulfurized ester-containing compound and mixtures thereof; wherein the total concentration of the oxymolybdenum-containing complex and antioxidant must be at least 1.3 wt %, based on the total weight of the lubricating oil composition and wherein the phosphorus content of the total lubricating oil composition is 0.08 wt % or less, based on the total weight of the lubricating oil composition.

IPC 8 full level

C10M 163/00 (2006.01); **C10M 169/04** (2006.01)

CPC (source: EP)

C10M 163/00 (2013.01); **C10M 169/045** (2013.01); C10M 2207/289 (2013.01); C10M 2215/02 (2013.01); C10M 2215/064 (2013.01); C10M 2215/08 (2013.01); C10M 2215/086 (2013.01); C10M 2215/28 (2013.01); C10M 2217/043 (2013.01); C10M 2219/022 (2013.01); C10M 2219/024 (2013.01); C10M 2219/046 (2013.01); C10M 2219/066 (2013.01); C10M 2223/04 (2013.01); C10M 2223/043 (2013.01); C10M 2223/045 (2013.01); C10M 2223/047 (2013.01); C10M 2223/063 (2013.01); C10M 2223/08 (2013.01); C10M 2227/09 (2013.01); C10N 2010/04 (2013.01); C10N 2010/12 (2013.01); C10N 2030/06 (2013.01); C10N 2030/24 (2020.05); C10N 2060/10 (2013.01)

C-Set (source: EP)

C10M 2215/28 + C10M 2215/28

Citation (applicant)

- US 6696393 B1 20040224 - BOFFA ALEXANDER B [US]
- US 6562765 B1 20030513 - BOFFA ALEXANDER B [US]
- US 3496105 A 19700217 - SUER WILLIAM M LE
- US 4263152 A 19810421 - KING JOHN M, et al
- US 3405064 A 19681008 - MILLER CLARK O
- US 3574576 A 19710413 - HONNEN LEWIS R, et al
- US 4157309 A 19790605 - KING JOHN M [US], et al
- US 3649229 A 19720314 - OTTO FERDINAND P
- US 3368972 A 19680213 - OTTO FERDINAND P
- US 3539663 A 19701110 - PIETRUSZA EDWARD W, et al
- US 3909430 A 19750930 - HOTTEN BRUCE W
- US 3968157 A 19760706 - HOTTEN BRUCE W
- US 2346156 A 19440411 - FARRINGTON BRUCE B, et al
- US 2003224949 A1 20031204 - RUHE WILLIAM R [US], et al
- US 3933659 A 19760120 - LYLE RICHARD E, et al
- US 4105571 A 19780808 - SHAUB HAROLD, et al
- US 4702859 A 19871027 - SHIMIZU SENZO [JP], et al
- US 4530771 A 19850723 - NAKANO TAKAHARU [JP], et al
- US 5629272 A 19970513 - NAKAZATO MORIKUNI [JP], et al
- US 3779928 A 19731218 - SCHLICHT R
- US 6203584 B1 20010320 - FUENTES-AFFLICK PETER A [US], et al
- US 3361673 A 19680102 - STUART FRANK A, et al
- US 3172892 A 19650309
- US 3912764 A 19751014 - PALMER JR JOHN F
- US 4234435 A 19801118 - MEINHARDT NORMAN A, et al
- US 5112507 A 19920512 - HARRISON JAMES J [US]
- US 5175225 A 19921229 - RUHE JR WILLIAM R [US]
- US 5565528 A 19961015 - HARRISON JAMES J [US], et al
- US 5616668 A 19970401 - HARRISON JAMES J [US], et al
- US 5286799 A 19940215 - HARRISON JAMES J [US], et al
- US 5319030 A 19940607 - HARRISON JAMES J [US], et al
- US 5625004 A 19970429 - HARRISON JAMES J [US], et al
- US 4152499 A 19790501 - BOERZEL PAUL [DE], et al
- US 5137978 A 19920811 - DEGONIA DAVID J [US], et al
- US 5137980 A 19920811 - DEGONIA DAVID J [US], et al
- EP 0355895 A2 19900228 - SHELL INT RESEARCH [NL]
- US 5792729 A 19980811 - HARRISON JAMES J [US], et al
- US 5777025 A 19980707 - SPENCER JEREMY R [GB], et al
- EP 0542380 A1 19930519 - SHELL INT RESEARCH [NL]
- US 5523417 A 19960604 - BLACKBOROW JOHN R [GB], et al
- EP 0602863 A1 19940622 - BP CHEM INT LTD [GB]
- US 2992708 A 19610718 - ALBERT LYON GEORGE

- US 3018250 A 19620123 - ANDERSON ROBERT G, et al
- US 3018291 A 19620123 - ANDERSON ROBERT G, et al
- US 3024237 A 19620306 - DRUMMOND ALAN Y, et al
- US 3100673 A 19630813
- US 3202678 A 19650824 - STUART FRANK A, et al
- US 3219666 A 19651123
- US 3272746 A 19660913 - LE SUER WILLIAM M, et al
- US 3381022 A 19680430 - LE SUER WILLIAM M
- US 4612132 A 19860916 - WOLLENBERG ROBERT H [US], et al
- US 4747965 A 19880531 - WOLLENBERG ROBERT H [US], et al
- US 5241003 A 19930831 - DEGONIA DAVID J [US], et al
- US 5266186 A 19931130 - KAPLAN MORRIS [US]
- US 5334321 A 19940802 - HARRISON JAMES J [US], et al
- US 5356552 A 19941018 - HARRISON JAMES J [US], et al
- US 5716912 A 19980210 - HARRISON JAMES J [US], et al
- US 4746446 A 19880524 - WOLLENBERG ROBERT H [US], et al
- US 3178368 A 19650413 - HANNEMAN WALTER W
- KIRK-OTHMER: "ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY", vol. 5, 1950, INTERSCIENCE PUBLISHERS, article "Ethylene Amines", pages: 898 - 905

Citation (search report)

- [Y] EP 1418220 A2 20040512 - CHEVRON ORONITE CO [US]
- [Y] EP 1422286 A1 20040526 - CHEVRON ORONITE CO [US]
- [A] US 4455243 A 19840619 - LISTON THOMAS V [US]
- [A] US 4495088 A 19850122 - LISTON THOMAS V [US]

Cited by

CN108531273A; CN105238503A; CN106635281A; US11479734B2; FR3039165A1; KR20180026545A; GB2461611A; GB2461611B; US8633142B2; US9885004B2; US11268044B2; US8703680B2; US10190072B2; WO2010039604A3; WO2017013238A1; WO2012071185A3; EP2300580A1

Designated contracting state (EPC)

DE FR GB NL

Designated extension state (EPC)

AL BA HR MK YU

DOCDB simple family (publication)

EP 1757673 A1 20070228; **EP 1757673 B1 20200415**

DOCDB simple family (application)

EP 05255181 A 20050823