

Title (en)

Lubricating oil compositions comprising a molybdenum compound and a zinc dialkyldithiophosphate

Title (de)

Schmierölszusammensetzungen mit einer Molybdänverbindung und einem Zink-Diäkyldithiophosphat

Title (fr)

Compositions d'huile de lubrification comportant un composé de molybdène et dialkyldithiophosphate de zinc

Publication

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Application

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Priority

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Abstract (en)

Provided herein are lubricating oil compositions comprising a major amount of a base oil, at least one oil-soluble molybdenum compound and a zinc dialkyldithiophosphate compound, wherein the molybdenum content derived from the molybdenum compound is at least 10 ppm based on the total weight of the lubricating oil composition and the phosphorus content derived from the zinc dialkyldithiophosphate compound is about 200 to 500 ppm based on the total weight of the lubricating oil composition. The lubricating oil composition can further comprise at least one additive. Methods of making and using the lubricating oil compositions are also described.

IPC 8 full level

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Citation (applicant)

- US 4164473 A 19790814 - COUPLAND KEITH [CA], et al
- US 4176073 A 19791127 - BROIS STANLEY J [US], et al
- US 4176074 A 19791127 - COUPLAND KEITH [CA], et al
- US 4192757 A 19800311 - BREWSTER PHILIP W [CA]
- US 4248720 A 19810203 - COUPLAND KEITH, et al
- US 4201683 A 19800506 - BREWSTER PHILIP W [CA]
- US 4289635 A 19810915 - SCHROECK CALVIN W
- US 4479883 A 19841030 - SHAUB HAROLD [US], et al
- US 4263152 A 19810421 - KING JOHN M, et al
- US 4285822 A 19810825 - DEVRIES LOUIS, et al
- US 4283295 A 19810811 - DEVRIES LOUIS, et al
- US 4272387 A 19810609 - KING JOHN M, et al
- US 4265773 A 19810505 - DEVRIES LOUIS, et al
- US 4261843 A 19810414 - KING JOHN M, et al
- US 4259195 A 19810331 - KING JOHN M, et al
- US 4259194 A 19810331 - DEVRIES LOUIS, et al
- US 6562765 B1 20030513 - BOFFA ALEXANDER B [US]
- WO 9406897 A1 19940331 - CHEVRON RES & TECH [US]
- US 3219666 A 19651123
- US 3172892 A 19650309
- US 3272746 A 19660913 - LE SUER WILLIAM 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
- MORTIER ET AL.: "Chemistry and Technology of Lubricants", 1996, SPRINGER
- A. SEQUERIA, JR.: "Lubricant Base Oil and Wax Processing", 1994, MARCEL DECKER
- D. V. BROCK, LUBRICATION ENGINEERING, vol. 43, 1987, pages 184 - 5
- "American Petroleum Institute", December 1996
- MORTIER ET AL.: "Chemistry and Technology of Lubricants", 1996, SPRINGER, pages: 75 - 85
- LESLIE R. RUDNICK: "Lubricant Additives: Chemistry and Applications", 2003, MARCEL DEKKER, pages: 113 - 136
- LESLIE R. RUDNICK: "Lubricant Additives: Chemistry and Applications", 2003, MARCEL DEKKER, pages: 223 - 258
- MORTIER ET AL.: "Chemistry and Technology of Lubricants", vol. 6, 1996, SPRINGER, pages: 190 - 193
- MORTIER ET AL.: "Chemistry and Technology of Lubricants", 1996, SPRINGER, pages: 183 - 187
- LESLIE R. RUDNICK: "Lubricant Additives: Chemistry and Applications", 2003, MARCEL DEKKER, pages: 171 - 222
- MORTIER ET AL.: "Chemistry and Technology of Lubricants", 1996, SPRINGER, pages: 187 - 189
- LESLIE R. RUDNICK: "Lubricant Additives: Chemistry and Applications", 2003, MARCEL DEKKER, pages: 329 - 354
- MORTIER ET AL.: "Chemistry and Technology of Lubricants", 1996, SPRINGER, pages: 190 - 193
- MORTIER ET AL.: "Chemistry and Technology of Lubricants", vol. 3, 1996, SPRINGER, pages: 86 - 90
- LESLIE R. RUDNICK: "Lubricant Additives: Chemistry and Applications", 2003, MARCEL DEKKER, pages: 137 - 170
- LESLIE R. RUDNICK: "Lubricant Additives: Chemistry and Applications", 2003, MARCEL DEKKER, pages: 1 - 28

Citation (search report)

- [X] EP 1354933 A1 20031022 - INFINEUM INT LTD [GB]
- [X] EP 1386957 A1 20040204 - CHEVRON ORONITE CO [US]
- [X] WO 03064568 A2 20030807 - EXXONMOBIL RES & ENG CO [US]

- [X] EP 1405898 A1 20040407 - INFINEUM INT LTD [GB]
- [X] US 2006223724 A1 20061005 - GATTO VINCENT J [US], et al
- [X] US 6500786 B1 20021231 - HARTLEY ROLFE J [US], et al

Cited by

RU2635569C2; EP2550346A4; WO2013083777A1; US9546340B2; US9896638B2; WO2012025901A1; WO2013164459A1; US10752858B2; WO2013164457A1; US10604717B2

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