

Title (en)

Low phosphorus/low zinc lubricants.

Title (de)

Phosphor- und Zinkarme Schmiermittel.

Title (fr)

Lubrifiants ayant une teneur basse en phosphore et zinc.

Publication

**EP 0280579 A2 19880831 (EN)**

Application

**EP 88301711 A 19880226**

Priority

GB 8704683 A 19870227

Abstract (en)

Lubricants having antiwear, corrosion inhibition and antioxidant performance appropriate to modern oil requirements with reduced or zero amounts of zinc and phosphorous and without the need for large amounts and/or expensive forms of antioxidant comprise 5 to 500 parts per million by weight (ppm) of added copper present in oil-soluble form, one or more added oil-soluble sulphur-containing compounds and a bearing corrosion inhibitor.

IPC 1-7

**C10M 135/00; C10M 141/08; C10M 141/12; C10M 161/00; C10M 167/00**

IPC 8 full level

**C10M 163/00** (2006.01); **C10M 135/00** (2006.01); **C10M 141/08** (2006.01); **C10M 141/12** (2006.01); **C10M 161/00** (2006.01); **C10M 167/00** (2006.01); **C10N 10/02** (2006.01); **C10N 30/02** (2006.01); **C10N 30/04** (2006.01); **C10N 30/10** (2006.01); **C10N 30/12** (2006.01); **C10N 40/00** (2006.01); **C10N 40/25** (2006.01)

CPC (source: EP KR)

**C10M 129/10** (2013.01 - EP); **C10M 129/38** (2013.01 - EP); **C10M 129/42** (2013.01 - EP); **C10M 129/58** (2013.01 - EP); **C10M 133/52** (2013.01 - EP); **C10M 135/04** (2013.01 - EP); **C10M 135/06** (2013.01 - EP); **C10M 135/18** (2013.01 - EP); **C10M 135/20** (2013.01 - EP); **C10M 135/30** (2013.01 - EP); **C10M 135/36** (2013.01 - EP); **C10M 139/00** (2013.01 - EP); **C10M 141/08** (2013.01 - KR); **C10M 141/12** (2013.01 - EP); **C10M 145/12** (2013.01 - EP); **C10M 145/16** (2013.01 - EP); **C10M 149/04** (2013.01 - EP); **C10M 149/10** (2013.01 - EP); **C10M 149/12** (2013.01 - EP); **C10M 149/22** (2013.01 - EP); **C10M 159/20** (2013.01 - EP); **C10M 159/24** (2013.01 - EP); **C10M 161/00** (2013.01 - EP); **C10M 163/00** (2013.01 - KR); **C10M 167/00** (2013.01 - EP); **C10M 2207/023** (2013.01 - EP); **C10M 2207/024** (2013.01 - EP); **C10M 2207/026** (2013.01 - EP); **C10M 2207/027** (2013.01 - EP); **C10M 2207/028** (2013.01 - EP); **C10M 2207/09** (2013.01 - EP); **C10M 2207/123** (2013.01 - EP); **C10M 2207/125** (2013.01 - EP); **C10M 2207/127** (2013.01 - EP); **C10M 2207/129** (2013.01 - EP); **C10M 2207/144** (2013.01 - EP); **C10M 2207/146** (2013.01 - EP); **C10M 2207/16** (2013.01 - EP); **C10M 2207/22** (2013.01 - EP); **C10M 2207/26** (2013.01 - EP); **C10M 2207/262** (2013.01 - EP); **C10M 2207/289** (2013.01 - EP); **C10M 2209/082** (2013.01 - EP); **C10M 2209/086** (2013.01 - EP); **C10M 2215/04** (2013.01 - EP); **C10M 2215/042** (2013.01 - EP); **C10M 2215/064** (2013.01 - EP); **C10M 2215/065** (2013.01 - EP); **C10M 2215/08** (2013.01 - EP); **C10M 2215/082** (2013.01 - EP); **C10M 2215/086** (2013.01 - EP); **C10M 2215/22** (2013.01 - EP); **C10M 2215/221** (2013.01 - EP); **C10M 2215/225** (2013.01 - EP); **C10M 2215/226** (2013.01 - EP); **C10M 2215/24** (2013.01 - EP); **C10M 2215/26** (2013.01 - EP); **C10M 2215/28** (2013.01 - EP); **C10M 2215/30** (2013.01 - EP); **C10M 2217/022** (2013.01 - EP); **C10M 2217/023** (2013.01 - EP); **C10M 2217/028** (2013.01 - EP); **C10M 2217/04** (2013.01 - EP); **C10M 2217/042** (2013.01 - EP); **C10M 2217/043** (2013.01 - EP); **C10M 2217/046** (2013.01 - EP); **C10M 2217/06** (2013.01 - EP); **C10M 2219/022** (2013.01 - EP); **C10M 2219/024** (2013.01 - EP); **C10M 2219/044** (2013.01 - EP); **C10M 2219/046** (2013.01 - EP); **C10M 2219/062** (2013.01 - EP); **C10M 2219/066** (2013.01 - EP); **C10M 2219/068** (2013.01 - EP); **C10M 2219/08** (2013.01 - EP); **C10M 2219/082** (2013.01 - EP); **C10M 2219/087** (2013.01 - EP); **C10M 2219/088** (2013.01 - EP); **C10M 2219/10** (2013.01 - EP); **C10M 2219/102** (2013.01 - EP); **C10M 2219/104** (2013.01 - EP); **C10M 2219/106** (2013.01 - EP); **C10M 2219/108** (2013.01 - EP); **C10M 2227/00** (2013.01 - EP); **C10M 2227/06** (2013.01 - EP); **C10M 2227/061** (2013.01 - EP); **C10M 2227/062** (2013.01 - EP); **C10M 2227/063** (2013.01 - EP); **C10M 2227/065** (2013.01 - EP); **C10M 2227/066** (2013.01 - EP); **C10N 2010/00** (2013.01 - EP); **C10N 2010/02** (2013.01 - EP); **C10N 2010/04** (2013.01 - EP); **C10N 2010/12** (2013.01 - EP); **C10N 2040/25** (2013.01 - EP); **C10N 2040/251** (2020.05 - EP); **C10N 2040/255** (2020.05 - EP); **C10N 2040/28** (2013.01 - EP); **C10N 2070/02** (2020.05 - EP)

Cited by

US5731273A; US5994277A; EP0680507A4; EP0725129A3; US5558805A; EP1329496A1; CN108929762A; EP0430528A1; EP0309105A1; US5013467A; US7696137B2; US7612025B2; US7563752B2; US8030257B2; US8211840B2; US7026273B2; US7625847B2; WO0218521A3; WO9303126A1; EP1884557A1; EP1887076A1

Designated contracting state (EPC)

AT BE CH DE ES FR GB GR IT LI LU NL SE

DOCDB simple family (publication)

**EP 0280579 A2 19880831; EP 0280579 A3 19890315; EP 0280579 B1 19921111**; AT E82316 T1 19921115; AU 1234288 A 19880901; AU 608295 B2 19910328; BR 8800836 A 19881004; CA 1306740 C 19920825; DE 3875755 D1 19921217; DE 3875755 T2 19930325; DK 104088 A 19880828; DK 104088 D0 19880226; ES 2036672 T3 19930601; GB 8704683 D0 19870401; GR 3007044 T3 19930730; JP 2698367 B2 19980119; JP S63304095 A 19881212; KR 880010107 A 19881007; KR 960014934 B1 19961021; MX 170236 B 19930812; MY 103222 A 19930529; NO 174211 B 19931220; NO 174211 C 19940330; NO 880847 D0 19880226; NO 880847 L 19880829; ZA 881260 B 19880822

DOCDB simple family (application)

**EP 88301711 A 19880226**; AT 88301711 T 19880226; AU 1234288 A 19880226; BR 8800836 A 19880226; CA 560011 A 19880226; DE 3875755 T 19880226; DK 104088 A 19880226; ES 88301711 T 19880226; GB 8704683 A 19870227; GR 930400276 T 19930211; JP 4405888 A 19880226; KR 880002059 A 19880227; MX 1058188 A 19880226; MY PI19880199 A 19880226; NO 880847 A 19880226; ZA 881260 A 19880223