

Title (en)
LOW PHOSPHORUS/LOW ZINC LUBRICANTS

Publication
EP 0280579 B1 19921111 (EN)

Application
EP 88301711 A 19880226

Priority
GB 8704683 A 19870227

Abstract (en)
[origin: EP0280579A2] 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)

C-Set (source: EP)
1. **C10M 141/12 + C10M 129/10 + C10M 129/38 + C10M 129/42 + C10M 129/42 + C10M 129/58 + C10M 135/04 + C10M 135/06 + C10M 135/18 + C10M 135/20 + C10M 135/30 + C10M 135/36 + C10M 139/00**
2. **C10M 161/00 + C10M 133/52 + C10M 129/10 + C10M 129/38 + C10M 129/42 + C10M 129/42 + C10M 129/58 + C10M 135/04 + C10M 135/06 + C10M 135/18 + C10M 135/20 + C10M 135/30 + C10M 135/36 + C10M 139/00 + C10M 145/12 + C10M 145/16 + C10M 149/04 + C10M 149/10 + C10M 149/22**
3. **C10M 167/00 + C10M 133/52 + C10M 129/10 + C10M 129/38 + C10M 129/42 + C10M 129/58 + C10M 135/04 + C10M 135/06 + C10M 135/18 + C10M 135/20 + C10M 135/30 + C10M 145/16 + C10M 135/36 + C10M 139/00 + C10M 145/12 + C10M 149/04 + C10M 149/10 + C10M 149/12 + C10M 159/20 + C10M 159/24**
4. **C10M 2207/127 + C10M 2207/127**

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

Designated contracting state (EPC)
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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