

Title (en)

LUBRICATING OIL COMPOSITION FOR AUTOMATIC TRANSMISSION

Title (de)

SCHMIERÖLZUSAMMENSETZUNG FÜR AUTOMATIKGETRIEBE

Title (fr)

COMPOSITION D'HUILE DE GRAISSAGE CONÇUE POUR UNE TRANSMISSION AUTOMATIQUE

Publication

EP 1422287 B1 20160217 (EN)

Application

EP 02746088 A 20020716

Priority

- JP 0207207 W 20020716
- JP 2001262497 A 20010830

Abstract (en)

[origin: EP1422287A1] A lubricating oil composition for automatic transmissions wherein the mass ratio of phosphorus : calcium : boron determined by elemental analysis is 1 : (0.1 to 2) : (0.06 to 2) : (0.2 to 20), the concentration of phosphorus is from 0.01 to 0.06 percent by mass, the concentration of the sulfur derived from a base oil is from 0 to 0.1 percent by mass, and the concentration of the sulfur derived from sulfur-based additives is from 0.01 to 0.15 percent by mass, based on the total amount of the composition. The lubricating oil composition can prevent the occurrence of scratch phenomenon even over a long period of time when used in a metal belt type continuously variable automatic transmission.

IPC 8 full level

C10M 171/00 (2006.01); **C10M 129/10** (2006.01); **C10M 129/54** (2006.01); **C10M 135/10** (2006.01); **C10M 135/18** (2006.01);
C10M 135/20 (2006.01); **C10M 135/32** (2006.01); **C10M 135/36** (2006.01); **C10M 137/02** (2006.01); **C10M 137/04** (2006.01);
C10M 137/08 (2006.01); **C10M 137/10** (2006.01); **C10M 159/22** (2006.01); **C10M 159/24** (2006.01); **C10M 169/04** (2006.01);
C10N 10/04 (2006.01); **C10N 20/00** (2006.01); **C10N 30/00** (2006.01); **C10N 40/04** (2006.01)

CPC (source: EP US)

C10M 169/04 (2013.01 - EP US); **C10M 171/00** (2013.01 - EP US); **C10M 2203/1006** (2013.01 - EP US); **C10M 2203/1025** (2013.01 - EP US);
C10M 2209/084 (2013.01 - EP US); **C10M 2215/28** (2013.01 - EP US); **C10M 2219/02** (2013.01 - EP US); **C10M 2219/022** (2013.01 - EP US);
C10M 2219/024 (2013.01 - EP US); **C10M 2219/046** (2013.01 - EP US); **C10M 2219/066** (2013.01 - EP US); **C10M 2219/08** (2013.01 - EP US);
C10M 2219/106 (2013.01 - EP US); **C10M 2219/108** (2013.01 - EP US); **C10M 2223/02** (2013.01 - EP US); **C10M 2223/045** (2013.01 - EP US);
C10M 2223/047 (2013.01 - EP US); **C10N 2010/04** (2013.01 - EP US); **C10N 2030/06** (2013.01 - EP US); **C10N 2040/042** (2020.05 - EP US);
C10N 2040/045 (2020.05 - EP US); **C10N 2060/14** (2013.01 - EP US)

Citation (opposition)

Opponent : Afton Chemical Corporation

- WO 9827187 A1 19980625 - EXXON CHEMICAL PATENTS INC [US]
- JP 2000109867 A 20000418 - NIPPON MITSUBISHI OIL CORP
- JP 2000109875 A 20000418 - NIPPON MITSUBISHI OIL CORP
- WO 9714773 A1 19970424 - EXXON CHEMICAL PATENTS INC [US]
- JP 2000109872 A 20000418 - NIPPON MITSUBISHI OIL CORP
- JP 2000063878 A 20000229 - JAPAN ENERGY CORP
- JP H0978079 A 19970325 - SHOWA SHELL SEKIYU
- EP 1055722 A1 20001129 - JAPAN ENERGY CORP [JP]
- EP 1428866 A1 20040616 - NIPPON OIL CORP [JP]
- US 6010988 A 20000104 - MATSUOKA TORU [JP], et al
- EP 0798367 A2 19971001 - IDEMITSU KOSAN CO [JP]
- WO 0073406 A1 20001207 - INFINEUM USA LP [US], et al
- US 5185090 A 19930209 - RYER JACK [US], et al
- ENGLISH LANGUAGE TRANSLATION OF D2
- ENGLISH LANGUAGE TRANSLATION OF D3
- ENGLISH LANGUAGE TRANSLATION OF D5
- ENGLISH LANGUAGE TRANSLATION OF D6
- ENGLISH LANGUAGE TRANSLATION OF D7
- FIRST DECLARATION OF DR. T. HENLY
- EXTRACT FROM A 2003 FUELS AND LUBRICANTS HANDBOOK BY G. E. TOTTEN
- HERBSTMAN ET AL., CHEMTECH, April 1990 (1990-04-01), pages 242 - 7
- STEPINA ET AL., LUBRICANTS AND SPECIAL FLUIDS, 1992, XP055323811
- HUA ET AL.: "analysis of sulphur containing compounds in crude oils by comprehensive two dimensional gas chromatography", J. SEP. SCI., vol. 27, 2004, pages 691 - 698, XP055323812
- SECOND DECLARATION OF DR. T. HENLY
- VACLAV STEPINA ET AL: "Lubricants and Special Fluids", 1992, ISBN: 044498674x, article "Lubricants and Special Fluids", pages: 301 - 308, XP055457588
- BHARAT BHUSHAN ET AL: "Modern Tribology Handbook", 2000, ISBN: 0849384036, pages: 366 - 372, XP055457590
- "Base Oil Handbook", 1997, pages: 7,13-14, 30 - 32, 46, XP055204502
- H. E. HENDERSON ET AL: "High Quality Base Oils for Next Generation Automatic Transmission Fluids", SAE TECHNICAL PAPER SERIES 982666, 1998, pages 1 - 22, XP055457611
- R. M. MORTIER ET AL: "Chemistry and Technology of Lubricants", 1997, ISBN: 075140246x, pages: 4, 25, XP055457614
- H.E. HENDERSON ET AL: "Higher Quality Base Oils for Tomorrow's Engine Oil Performance Categories", SAE TECHNICAL PAPER SERIES 982582, 1998, pages 1 - 13, XP055457619

Cited by

EP1544278A1; WO2006057292A1; US8034754B2; US7803332B2; US7531486B2; US7648948B2; US7902132B2

Designated contracting state (EPC)

DE FR GB

DOCDB simple family (publication)

EP 1422287 A1 20040526; EP 1422287 A4 20140416; EP 1422287 B1 20160217; CN 100406543 C 20080730; CN 1549853 A 20041124;
JP 2003073683 A 20030312; JP 4919555 B2 20120418; US 2004167041 A1 20040826; US 2009018038 A1 20090115;
WO 03020858 A1 20030313

DOCDB simple family (application)

EP 02746088 A 20020716; CN 02817011 A 20020716; JP 0207207 W 20020716; JP 2001262497 A 20010830; US 23398108 A 20080919;
US 77353104 A 20040206