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(54) **Lubricant composition for automatic transmission**

(57) The invention provides a lubricant composition for automatic transmissions excellent in sustainability of anti-shudder property, low-temperature viscosity characteristics, and oxidation stability, and excellent and well-balanced in durability of friction characteristics, energy-conserving performance, and anti-fatigue performance on gears. The composition contains a base oil having a kinematic viscosity at 100 °C of 3.7-4.1 mm²/s, and composed of base oil having the viscosity of 2.5-4.5 mm²/s, and base oil having the viscosity of 10-40 mm²/s; 1-20

mass% poly(meth)acrylate viscosity index improver having Mw of 15000-30000; 2-4 mass% imide friction modifier having a C8-C30 hydrocarbon group; 0.01-0.04 mass% phosphorus extreme pressure agent in terms of phosphorus; and 0.01-0.04 mass% ashless dispersant having at least one alkyl or alkenyl group of a number average molecular weight of ≥2000 in terms of nitrogen, all with respect to the total amount of the composition, and has the viscosity of 5.6-5.8 mm²/s.

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EUROPEAN SEARCH REPORT

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| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|--|---|--|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
| X | US 2004/192562 A1 (MORITA EITARO [JP]) 30 September 2004 (2004-09-30) * paragraphs [0014] - [0016], [0041], [0050] - [0065], [0094], [0095], [0106], [0110]; tables 1,2 * | 1,2 | INV. C10M169/04 |
| A | EP 1 598 412 A (NIPPON OIL CORP [JP]) 23 November 2005 (2005-11-23) * examples 3-9; table 1 * | 1,2 | ADD. C10N20/02 C10N20/04 C10N30/02 C10N30/06 C10N40/04 |
| A | US 2002/072478 A1 (ISHIDA NOBORU [JP] ET AL) 13 June 2002 (2002-06-13) * paragraphs [0080] - [0104]; table 1 * | 1,2 | |
| A | EP 1 559 772 A (NIPPON OIL CORP [JP]) 3 August 2005 (2005-08-03) * tables 1,2 * | 1,2 | |
| A | EP 0 889 112 A (TONEN CORP [JP]; TOYOTA MOTOR CO LTD [JP]) 7 January 1999 (1999-01-07) * tables 1-4 * | 1,2 | |
| A | BARTHA L ET AL: "Polyfunctional PIB succinimide type engine oil additives" LUBRICATION SCIENCE, LEAF COPPIN PUBLISHING LTD, US, vol. 13, no. 4, 1 August 2001 (2001-08-01), pages 313-328, XP009107449 ISSN: 0954-0075 | | |
| The present search report has been drawn up for all claims | | | TECHNICAL FIELDS SEARCHED (IPC) C10M |
| 7 | Place of search Munich | Date of completion of the search 21 October 2008 | Examiner Pöllmann, Klaus |
| CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | | | |

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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21-10-2008

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---------------------|---|--|
| US 2004192562 A1 | 30-09-2004 | WO 03031544 A1 JP 2003113391 A | 17-04-2003 18-04-2003 |
| EP 1598412 A | 23-11-2005 | WO 2004074414 A1 KR 20050098956 A US 2006135378 A1 | 02-09-2004 12-10-2005 22-06-2006 |
| US 2002072478 A1 | 13-06-2002 | JP 4015355 B2 JP 2002105478 A | 28-11-2007 10-04-2002 |
| EP 1559772 A | 03-08-2005 | AU 2003280701 A1 CN 1711345 A WO 2004041977 A1 JP 2004155873 A US 2006105921 A1 | 07-06-2004 21-12-2005 21-05-2004 03-06-2004 18-05-2006 |
| EP 0889112 A | 07-01-1999 | WO 9817747 A1 | 30-04-1998 |