

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
14 May 2010 (14.05.2010)

(10) International Publication Number  
**WO 2010/053890 A1**

PCT

(51) International Patent Classification:

*C10M 145/14* (2006.01) *C10M 153/02* (2006.01)  
*C10M 149/02* (2006.01) *C10N 30/04* (2006.01)  
*C10M 149/06* (2006.01) *C10N 40/25* (2006.01)  
*C10M 151/02* (2006.01)

(21) International Application Number:

PCT/US2009/063046

(22) International Filing Date:

3 November 2009 (03.11.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/111,408 5 November 2008 (05.11.2008) US

(71) Applicant (for all designated States except US): **THE LUBRIZOL CORPORATION** [US/US]; 29400 Lakeland Blvd., Wickliffe, Ohio 44092-2298 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **QIN, Haihu** [CN/US]; 29400 Lakeland Blvd., Wickliffe, Ohio 44092-2298 (US). **WANG, Ying** [CN/US]; 29400 Lakeland Blvd., Wickliffe, Ohio 44092-2298 (US). **BAUM, Marina** [US/US]; 29400 Lakeland Blvd., Wickliffe, Ohio 44092-2298 (US). **KELLEY, Jack** [US/US]; 29400 Lakeland Blvd., Wickliffe, Ohio 44092-2298 (US). **MOSIER, Patrick E.** [US/US]; 29400 Lakeland Blvd., Wickliffe, Ohio 44092-2298 (US). **COVITCH, Michael J.** [US/US]; 29400 Lakeland Blvd., Wickliffe, Ohio 44092-2298 (US). **MULLAY, John J.** [US/US]; 29400 Lakeland Blvd., Wickliffe, Ohio 44092-2298 (US).

(74) Agents: **SHOLD, David M.** et al.; The Lubrizol Corporation, Patent Dept./052A, 29400 Lakeland Blvd., Wickliffe, Ohio 44092-2298 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

Published:

— with international search report (Art. 21(3))

(54) Title: COMPOSITION CONTAINING A BLOCK COPOLYMER AND A METHOD OF LUBRICATING AN INTERNAL COMBUSTION ENGINE

(57) Abstract: The invention provides a lubricating composition containing an oil of lubricating viscosity and a block copolymer. The block copolymer may contain (a) a hydrophobic first block having C1-30 alkyl (meth)acrylic units, wherein at least 50 wt % of the C1-30 alkyl (meth)acrylic units are C12-15 alkyl (meth)acrylic units, and up to 50 wt % of the C1-30 alkyl (meth)acrylic units are C16-20 alkyl (meth)acrylic units, with the proviso that alkyl groups of the C1-30 alkyl (meth)acrylic units have an average total number of carbon atoms of at least 8; and (b) a second block having (meth)acrylic units further having a heteroatom-containing group providing a polar group. The invention further relates to a method of lubricating an internal combustion engine by lubricating the engine with the lubricating composition. The invention further relates to the use of the block copolymer as an emulsifier and/or pour point depressant.



WO 2010/053890 A1