

(10) International Publication Number
WO 2016/036493 A1(43) International Publication Date
10 March 2016 (10.03.2016)(51) International Patent Classification:
C10M 141/06 (2006.01)(21) International Application Number:
PCT/US2015/045255(22) International Filing Date:
14 August 2015 (14.08.2015)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/045,843 4 September 2014 (04.09.2014) US(71) Applicant: VANDERBILT CHEMICALS, LLC
[US/US]; 30 Winfield Street, Norwalk, Connecticut 06855 (US).

(72) Inventors: YAO, Junbing; Tower A, No. 8 Hangfeng Road, Fengtai District, Beijing 100000 (CN). GATTO, Vincent; 70 W. Main Street, Milford, Connecticut 06460 (US).

(74) Agent: LONDA, Bruce, S.; Norri, Mclaughlin & Marcus P.A., 875 Third Ave, 8th Floor, New York, New York 10022 (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, BN, 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, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, 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, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

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

— with amended claims (Art. 19(1))

(54) Title: LIQUID ASHLESS ANTIOXIDANT ADDITIVE FOR LUBRICATING COMPOSITIONS

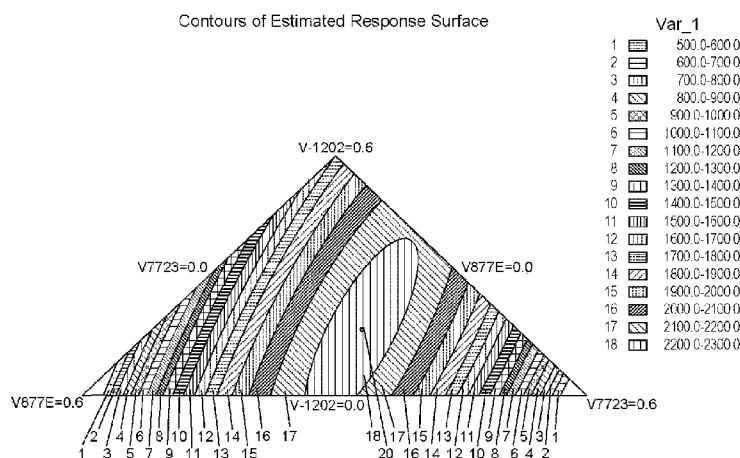


FIG. 1

(57) Abstract: A lubricating composition comprising at least 90% by weight of a base oil, and an antioxidant composition comprising the components, set forth as weight % of the lubricating composition: (1) solid alkylated-phenyl-alpha-naphthylamine at 0.01-0.3%, (2) an alkylated diphenylamine derivative of triazole, toluetriazole or benzotriazole, at 0.01-0.3%, and (3) methylenebis(di-n-butylthiocarbamate), at 0.01-0.4%.