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- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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(54) Title: MARINE DIESEL ENGINE LUBRICATING OIL COMPOSITION

(57) Abstract: A marine diesel lubricating oil composition having a TBN from about 5 to about 120 containing a base oil of lubricating viscosity, an overbased alkylaryl C<sub>10-40</sub> sulfonate detergent and an overbased isomerized C<sub>10-40</sub> normal alpha olefin based phenate detergent, wherein the weight ratio of the overbased sulfonate detergent to the overbased isomerized normal alpha olefin based phenate detergent ranges from 1:9 to 9:1.



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US16/14926

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> <b>IPC(8) - C10M 105/38, 125/10, 135/02 (2016.01)</b> <b>CPC - C10M 105/38, 135/02, 159/24</b> According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) <b>IPC(8): C10M 105/38, 125/10, 135/02, 159/22, 159/24 (2016.01)</b> <b>CPC: C10M 105/38, 135/02, 159/24</b> Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, Other Countries (INPADOC), RU, AT, CH, TH, BR, PH); EBSCO; PatentsGoogle; Google Scholar; sciencedirect.com; OnePetro.org; alkyl aryl sulfonate, phenate, normal alpha olefin, C10-40, detergent, marine diesel lubricant, alkaline metal salt, calcium, base oil, 15 to 99 percent branching, residue, glycerol ester, weight ratio, TBN		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — Y	US 2004/0242433 A1 (ROBY, SH et al) 02 December 2004; paragraphs [0011], [0027], [0042], [0059]-[0086], [0105], [0116], [0130]; example 1	1-2 — 3-10
Y	US 2014/0287969 A1 (JUKES, RTF) 25 September 2014; table 3; paragraphs [0011]-[0013], [0018]-[0019], [0037], [0041], [0091]-[0093]	3-5, 9-10
Y	EP 0 317 354 B1 (EXXON CHEMICAL PATENTS INC) 08 July 1992; page 22, lines 55-58; tables 1-2	6
Y	WO 2011/066115 A2 (CHEVRON USA INC) 03 June 2011; paragraphs [0014], [0065]	7-8
A	US 5,137,648 A (MARSH, JF et al.) 11 August 1992; entire document	1-10
A	US 4,614,602 A (VALCHO, JJ et al.) 30 September 1986; entire document	1-10
A	US 2005/0209110 A1 (ROSKI, JP et al.) 22 September 2005; entire document	1-10
A	US 3,389,161 A (KOTTONG, GW et al.) 18 June 1968; entire document	1-10
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300		Authorized officer Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774