

ABSTRACT

HIGH LOAD-CARRYING TURBO OILS
CONTAINING AMINE PHOSPHATE AND
2-ALKYLTHIO-1,3,4-THIADIAZOLE-5-ALKANOIC ACID

This invention relates to synthetic based turbo oils, preferably polyol ester-based turbo oils which exhibit exceptional load-carrying capacity by use of a synergistic combination of sulfur (S)-based and phosphorous (P)-based load additives. The S-containing additive of the present invention is 2-alkylthio-1,3,4-thiadiazole-5 alcanoic acid (ATAA) obtained by reacting 2,5-dimercapto-1,3,4-thiadiazole (DMTD) with alkyl bromide and subsequently reacting the intermediate with haloalkanoic acid. The P-containing additive is one or more amine phosphate(s). The turbo oil composition consisting of the dual P/S additives of the present invention achieves a superior load-carrying capacity over that obtained when each additive was used alone at individual treat rates higher than the total additive combination treatrate, and also meets or exceeds US Navy MIL-L-23699 requirements including Oxidation and Corrosion Stability and Si seal compatibility.