

LUBRICATING OIL COMPOSITIONS FOR IMPROVING LOW-SPEED PRE-IGNITION

ABSTRACT

The present disclosure relates to lubricating compositions and methods of lubricating a spark-ignition engine effective to improve low-speed pre-ignition (LSPI) through selection of lubricant elemental relationships rather than through the addition of supplemental fluid additives with the added benefit that the relationships herein, in some circumstances, improve the low-speed pre-ignition independent of the underlying base oil quality. The lubricating compositions herein include one or more base oils of lubricating viscosity, one or more phosphorus-containing additives providing low levels of phosphorus, a detergent system providing calcium and/or magnesium with certain relationships of the calcium sulfated ash content to the low phosphorus content.

[No Available Figure]