ABSTRACT

IMPROVED ANTI-WEAR PERFORMANCE OF LUBRICANTS USING CARBON NANOPLATELETS

Provided are a lubricating engine oil and a method of improving wear protection in an engine lubricated with such lubricating oil. The method includes using as the lubricating oil a formulated oil comprising a lubricating oil base stock as a major component, an antiwear additive as a first minor component, and carbon nanoplatelets as a second minor component. The carbon nanoplatelets are dispersed in said lubricating oil base stock. Wear protection is improved as compared to wear protection achieved using a lubricating oil not containing carbon nanoplatelets as a second minor component. A synergy exists between carbon nanoplatelets and other major components of lubricants, especially with zinc dialkyldithiophosphate (ZDDP) or other phosphate antiwear additives, that helps to form a nano-composite wear resistant and low friction tribofilm both on ferrous and non-ferrous surfaces (e.g., carbon coatings, ceramic coatings, polymeric coatings, and the like) of engines/machines.

(FIG. 1)