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Research Article

Tribochemistry and EP Activity Assessment of Mo-S Complexes in Lithium-Base Greases

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Abstract

The blends of bis(1,5-diaryl-2,4-dithiomalonamido)dioxomolybdenum(VI) complexes in lithium-base grease are evaluated for their extreme pressure activity in a “four-ball test” using 12.7 mm diameter alloy steel ball specimen. The additive, bis(1,5-di-p-methoxyphenyl-2,4-dithiomalonamido)dioxomolybdenum(VI) and bis(1,5-di-p-chloro-phenyl-2,4-dithiomalonamido)dioxomolybdenum(VI) exhibited lower values of wear-scar diameter at higher load and higher values of weld load, flash temperature parameter, and pressure wear index as compared with lithium-base grease without additives. The greases fortified with the developed additives prevent rusting and corrosion of bearings while grease containing no additives did not pass these tests as per the standard tests. These greases have also better oxidation protection as compared to the grease that has no additive. The topography and tribochemistry of the wear-scar surface are carried out by means of scanning electron microscopy and Auger electron spectroscopy techniques, respectively.