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| <b>Abstract</b>               | : | <p><b>Purpose</b><br/>The purpose of this paper is to investigate the performance of bio-based lubricants (BBL), namely, palm mid-olein (PMO) enriched with an antioxidant agent, tertiary-butylhydroquinone (TBHQ) and a viscosity improver, ethylene-vinyl acetate (EVA), in journal bearing (JB) applications.</p> <p><b>Design/methodology/approach</b><br/>Samples of the BBL were prepared by blending it with TBHQ and EVA at various blending ratios. The oxidative stability (OS) and viscosity of the BBL samples were examined using differential scanning calorimetry and a viscometer, respectively. Meanwhile, their performance in JB applications was evaluated through the use of a JB test rig with a 0.5 length-to-diameter ratio at various operating conditions.</p> <p><b>Findings</b><br/>It was found that the combination of PMO + TBHQ + EVA demonstrated a superior oil film pressure and load-carrying capacity, resulting in a reduced friction coefficient and a smaller attitude angle compared to the use of only PMO or VG68. However, it was observed that the addition of TBHQ and EVA to the PMO did not have a significant impact on the minimum oil film thickness.</p> <p><b>Practical implications</b><br/>The results would be quite useful for researchers generally and designers of bearings in particular.</p> |