

## Friction and Wear Characteristics of Pongamia Oil Based Blended Lubricant at Different Load and Sliding Distance

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**Abstract :** Around the globe, there is demand for the development of bio-based lubricant which will be biodegradable, non-toxic and environmental friendly. This paper outlines the friction and wear characteristics of Pongamia oil (PO) contaminated bio-lubricant by using pin-on-disc tribometer. To formulate the bio-lubricants, PO was blended in the ratios 15, 30 and 50% by volume with the base lubricant SAE 20 W 40. Tribological characteristics of these blends were carried out at 3.8 m/s sliding velocity and loads applied were 50, 100, 150 N. Experimental results showed that the lubrication regime that occurred during the test was boundary lubrication while the main wear mechanisms were abrasive and the adhesive wear. During testing, the lowest wear was found with the addition of 15% PO, and above this contamination, the wear rate was increased considerably. With increase in load, viscosity of all the bio-lubricants increases and meets the ISO VG 100 requirement at 40 °C except PB 50. The addition of PO in the base lubricant acted as a very good lubricant additive which reduced the friction and wear scar diameter during the test. It has been concluded that the PB 15 can act as an alternative lubricant to increase the mechanical efficiency at 3.8 m/s sliding velocity and contribute in reduction of dependence on the petroleum based products.

**Keywords :** friction, load, pongamia oil, sliding velocity, wear

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