Formulation of eco-friendly lubricant from non-edible vegetable oils

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# ABSTRACT – This study aims to examine the impact of eco-friendly lubricants on friction and wear characteristics. The formulation of eco-friendly lubricant is made by combining SAE 15W40 with non-edible vegetable oils (castor oil and jatropha oil) in a range of 0-100 vol.% using sonication technique. According to engineering standards (ASTM D4172-94), a four-ball tribometer was used to conduct the tribological test. The diameter of the wear scar was measured using a digital microscope. A tribological test reveals that the formulation of eco-friendly lubricant containing 80% SAE 15W40, 10% castor oil, and 10% jatropha oil has the lowest coefficient of friction and wear scar diameter of 0.07560 and 386.3 µm, respectively. Thus, the formulation of eco-friendly lubricants demonstrated superior lubricant performance when compared to pure SAE 15W40, castor oil, and jatropha oil.

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Variation in the coefficient of friction and wear scar diameter of eco-friendly lubricants formulated from mixture of engine oil and non-edible vegetable oils.