Alternative Lubricant Based on Renewable Resources for Industrial Applications

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Bio-lubricants are often touted as a solution but the geographical necessities of cultivation can restrict their practicality as an absolute substitute to petroleum-based lubricants. The development of a novel environmentally-friendly bio-lubricant is the primary focus of this paper. The physico-chemical properties of the bio-lubricant were analyzed using multiple standards tribometers. This study provided sufficient data to conform an ISO VG 68 hydraulic industrial lubricant by blending 52.70 % (wt) soybean oil, 40.55 % (wt) mineral oil, and 6.75 (%) additive packages. This formulated blend as green alternative for machine lubrications will be significant in reducing perilous environmental pollution and depletion of natural resources. Moreover, it can contribute to reduce the global demand of petroleum based lubricant substantially.

The papers described the formulation of bio-lubricant which causes no harm to the environment. It also included determination of physico-chemical properties of the formulated blend. Considerable information related to viscosity fitting of the newly developed environment-friendly lubricant was outlined. The findings suggest that the viscosity and viscosity index of the formulated oil sample had

demonstrated compliance with the ISO specifications. The viscosity fit required for the commercial lubricant (ISO VG 68) was achieved by blending a number of mixtures of 52.70 % (wt) soybean oil, 40.55 % (wt) mineral oil, and 6.75 (%) additives. The results have indicated a relatively good conformance of pour point values for the formulated oil and fitted lubricant of -20 C and -30 C respectively. This implied that the blended bio-lubricant could be used in cold and wild regions. The flash point test was also performed and was observed of 259 C. This high flash point of formulated oil offers safer transportation to avoid explosions. As a result of this research, this bio-lubricant which derived from renewable and lower carbon sources can serve as a promising, eco-friendly, alternative for conventional machine lubricants based on mineral oils without any shortcomings. This, in turn, will considerably minimize the crucial threat of environmental pollution and rapid consumption of natural resources. Moreover, it can be the ultimate solution to the high demand of petroleum based lubricants around the world.

Keywords: Bio-lubricant, renewable resources, sliding bearings, viscosity.

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