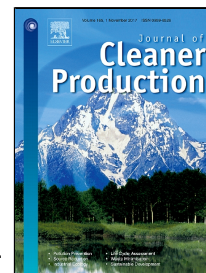


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A review on bio-based lubricants and their applications

A.Z. Syahir, N.W.M. Zulkifli, H.H. Masjuki, M.A. Kalam, Abdullah Alabdulkarem, M. Gulzar, L.S. Khuong, M.H. Harith



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1 **A review on bio-based lubricants and their applications**

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15

16 Abstract

17 In transportation and industrial sectors, the world relies heavily on petroleum-based products
18 which may cause grave concern related to future energy security. On certain cases, these
19 products would end up back to the environment causing serious environmental pollution and
20 hazards. Recognized as potential substitutes to mineral-based lubricants, bio-based lubricants
21 have received growing interest as they play a significant role in overcoming above problems.
22 Bio-based lubricants have been found to exhibit superior lubricant properties over the
23 conventional mineral lubricants, with renewability and biodegradability being their strongest
24 suit. There is a strong need to review the available literature to explore the potential of bio-
25 based lubricants for various applications. In this regard, the goal of this paper is to highlight
26 the potential of biolubricants for a broad range of applications based upon the published
27 researches over the past decade. The correlation between molecular structures,
28 physicochemical properties and lubrication performance of natural oil were reviewed which is
29 essential for lubricant development and selection. This review also acknowledged some

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