

Wear characteristic of RBD palm olein using four-ball tribotester

Abstract

Palm oil shows a great potential to be used as a lubricant. It is a vegetable oil which is environmentally friendly and has a high biodegradability in comparison to mineral oil. However, the research of the properties of palm oil based lubricant from the industrial point of view has never been widely conducted. In this research, the tribological properties of RBD palm olein; which is one of the palm oil refine product, was tested with four-ball tribotester to investigate its wear resistance. The testing method followed the ASTM D4172. The investigation was continued with 40kg, 80kg and 120 kg normal loads. For comparison, similar experimental and analytical works were done with additive-free paraffinic mineral oil and their results were compared with RBD palm olein. The analysis focused on the temperature properties, friction coefficient and wear observation. Results show that RBD palm olein has a good wear resistance performance in high and low temperature compared to additive free paraffinic mineral oil, especially at high normal load.