

## Wear resistance evaluation of palm fatty acid distillate using four-ball tribotester

### Abstract

Petroleum reserves are declining nowadays while ironically petroleum is a major source of pollution despite many uses. Researchers are in effort to find an alternative to replace petroleum as a lubricant. One of the best replace sources for petroleum is bio-oil. In this paper, a comparative study of friction and wear was carried out using a fourball tester. In this research, Palm Fatty Acid Distillate (PFAD) and Jatropha oil, two well-known oils from the vegetable family oils were compared with Hydraulic mineral oil and commercial mineral Engine oil. All investigated oils in this study are used in industries as lubricants. PFAD is a product from refined crude palm oil. It exists as a light brown solid at room temperature and Jatropha oil is produced from the seeds of the *Jatropha crucea*, a plant that grows in marginal lands. For the wear test, the experimental research condition was comparing four kind of oils with ASTM condition in which the load applied was 392N. The sliding speed was 1200rpm under the lubricant temperature of 75 degree Celsius. The experiment was run for 3600 seconds. The experimental results demonstrated that the PFAD and Jatropha oils exhibited better performance in term of friction and wear compared to Hydraulic and Engine mineral oils.