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| Abstract | : | <p>Palm oil shows significant potential for development as a lubricant due to its long molecular fatty acid chain, which is capable of minimizing wear and friction. However, in certain conditions, the formation of a thin layer of fluid film may no longer sustain to protect the contact surfaces. Therefore, a relevant additive is needed to address this issue. In this study, trimethylolpropane (TMP) was used as a lubricant, and Graphene Oxide (GO) was employed as the nano-based additive. A Four-ball tribotester was utilized to determine the friction coefficient, wear scar, and surface roughness of the contact surfaces under various operating conditions. The results were compared to mineral and synthetic-based oils. It was found that the combination of TMP and GO exhibited a lower friction coefficient compared to mineral and synthetic-based oils, but slightly higher compared to pure TMP. However, TMP+GO demonstrated significant improvement in terms of wear scar diameter and surface roughness. The physical appearance of the wear was also discussed in this study.</p> |