

INFLUENCE OF COPPER AND MILD STEEL ON STABILITY OF PALM BIODIESEL

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Abstract: Fossil fuel depletion has caused a serious concern, which has promoted the search for alternative energy source. Use of biodiesel has recently been proven as a potential source of energy. However, commercial use of higher blends of biodiesel in automobiles is being questionable because of its unstable fuel properties. The present study aims to investigate stability of different fuel properties of palm biodiesel upon exposure to copper and mild steel, which are exposed to biodiesel in automobile engines. Static immersion tests were conducted by exposing metallic coupons in palm biodiesel at room temperature for different periods viz., 20, 40, 60 days. Compositional analysis was done by gas chromatography. Investigated fuel properties include induction period, total acid value, water content, calorific value, viscosity, density, cloud point, pour point etc. Results show that copper has strong influence on of fuel properties, especially viscosity, water content, calorific value, density etc. SEM/EDS analysis was conducted to investigate the relative effect of exposure time of palm biodiesel on both metallic surfaces with corrosion rate. Compositional analysis showed that concentration of the principal constituents of palm biodiesel i.e. methyl oleate and palmitate, reduced more in copper exposed biodiesel than that in mild steel exposed biodiesel.