STUDY OF THE COMPOSITIONS AND FUEL PARAMETERS OF THE EMULSION FUELS BIODIESEL-AQUEOUS ETHANOL AND BIODIESEL-AQUEOUS ETHANOL-DIESEL

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Abstract

The present study investigates the compositions and fuel parameters of the aqueous ethanol-diesel-biodiesel emulsion fuel in a stable emulsion. The biodiesel obtained was characterized by employing gas chromatography-mass spectrometry measurement. The palm oil methyl esters were dominated by the Hexadecanoic Acid and 9-Octadecenoic Acid (Z)-), while coconut oil methyl esters have mainly consisted of Dodecanoic Acid and Tetradecanoic Acid. The biodiesel was blended with aqueous ethanol and diesel until a stable solution was formed with specific compositions. The range compositions of water, ethanol, and palm oil biodiesel in the stable emulsion were 0.81-1.25, 12.70-40.42, and 58.33-86.49 %, while water, ethanol, and coconut oil biodiesel were 0.70-0.88, 13.71-22.63, and 76.67-85.42%. The sample prepared showed that the droplet appeared in the emulsion, which employed ethanol 94-95% but was distributed uniformly throughout the substance. The fuel parameters investigated were the density, viscosity, flash point, Reid vapor pressure, pour point, distillation properties, and the cetane number.

Keywords: Bioethanol, Biodiesel, Composition, Diesel, Emulsion, Water