

عنوان مقاله:

Performance Evaluation and Emission Characterisation of Biodiesel from Shea Butter on Compression Ignition Engine

محل انتشار:

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خلاصه مقاله:

Shea biodiesel (SBD) was produced and blended with diesel at various proportions to produce 100B (SBD), 75B, 50B, 25B, and D (diesel) as fuel types. The SBD and other fuel types were characterised by ASTM standard methods for its physicochemical properties. The fuel types were used in a compression ignition engine (CIE) to test for its fuel consumption, (FC) specific fuel consumption (SFC), brake thermal efficiency (BTE), exhaust temperature (ET) and emission characteristics hydrocarbon (HC), carbon dioxide (CO₂), carbon monoxide (CO), nitrogen oxide (NO_x) and sulphur dioxide (SO₂). The physicochemical properties of SBD in terms of density, kinematic viscosity, flash point, cloud and pour points, and cetane number were 884.7 kg/m³, 5.69 mm²/s, 165 oC, 12 oC, 9 oC and 55, respectively; while those of diesel were 860.4 kg/m³, 2.6 mm²/s, 73 oC, 2.4 oC, -9 oC and 49, respectively. The results were within the range of the standard. The results obtained at 12 Nm torque for SFC, FC, BTE, and ET for SBD were 0.21 kg/kW.h, 0.71 kg/h, 12.69%, and 365 oC, respectively, while those of diesel were 0.31 kg/kW.h, 1.12 kg/h, 8.46%, and 330 oC, respectively. These results show that the SBD and diesel possessed similarity in terms of performance. The SBD is environmentally friendly compared to diesel. This study shows that the SBD possessed quality alternative .replacement to diesel suitable for a CIE

کلمات کلیدی:

Biodiesel, Compression ignition engine, Diesel, Emission, performance

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