Abstract

Physical properties of crude oil from five indigenous oilseeds were determined together with their formulations based on their mixture with diesel. The effects of temperature and methods of extraction on some of the properties were analysed and the results compared to those of petroleum and conventional vegetable oils. The density of the oils decreased linearly with increase in temperature and varied from a minimum of 9124 kg/rrr' to a maximum of 9474 kg/rn' at 293 "K. The viscosity of the oils decreased with increase in temperature varying from a minimum of 52.2 mm2/s to a maximum of 204.9 mmvs at 293°K. The addition of diesel into the vegetable oils resulted in the decrease of their viscosity. The calorific values of the oils ranged from 38 MJ/kg to 42 MJ/kg increasing with the addition of diesel. Specific heat capacity of the oils was less than 2.4 Kl/kg tK whereas thermal conductivity was greater than 1.0 Kl/hrK m. Ash content of the oils ranged from 0.0048 to 0.42 % and their refractive indices ranged from 1.468 to 1.475. The chemically extracted oils had lower values of flash and fire point compared to the mechanically extracted oils. The values were lower by over 37%. Most of the oils were slightly acidic with a pH range of 5.1 to 6.6. The oils showed a high potential for use as lubricants, hydraulic fluids and as fuel in diesel engines.