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Evaluation of Fuel Properties of Six Tropical Hardwood Timber Species for Briquettes

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Abstract : The fuel potential of six tropical hardwood species namely: Triplochiton scleroxylon, Ceiba pentandra, Aningeria robusta, Terminalia superba, Celtis mildbreadii and Piptadenia africana were studied. Properties studied include the species density, gross calorific value, volatile matter, ash, organic carbon, N, H, S, Cu, Pb, As and Cd content. Fuel properties were determined using standard laboratory methods. The result indicates that the Gross Calorific Value (GCV) of the species ranged from 20.16 to 22.22 MJ/kg and they slightly varied from each other. Additionally, the GCV of the biomass materials were higher than that of other biomass materials like; wheat straw, rice straw, maize straw and sugar cane. The ash and volatile matter content varied from 0.6075 to 5.0407%, and 75.23% to 83.70% respectively. The overall rating of the properties of the six biomass materials suggest that Piptadenia africana has the best fuel property to be used as briquettes and Aningeria robusta the worse. This study therefore suggests that a holistic assessment of a biomass material needs to be done before selecting it for fuel purpose.

Keywords : ash content, briquette, calorific value, elemental composition, species, volatile matter
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