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## Characterization and evaluation of rice husk ash and wood ash in sustainable clay matrix bricks

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### Abstract

This study analyzes the feasibility of using biomass combustion ash waste (rice husk or wood ash from boards) as secondary raw materials in the manufacture of clay bricks.

The ash was characterized using particle size distribution analysis, chemical composition analysis by X-ray diffraction (XRD) and X-ray fluorescence (XRF), thermal analysis, elemental analysis, and scanning electron microscopy (SEM). Either rice husk ash or wood ash was used to replace different amounts (10-30 wt%) of clay in brick manufacture. Brick samples were formed by compression at 54.5 MPa and fired at temperatures of 900 or 1000 °C for 4 h, at a heating rate of 3 °C/min. The bricks' properties were compared to conventional products containing only clay and prepared following standard procedures. The bricks' technological properties depended on type and amount of

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