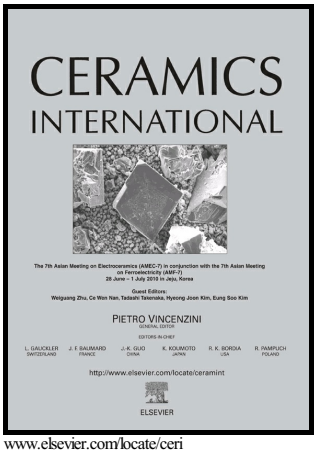

www.elsevier.com/locate/ceri

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

D. Eliche-Quesada, M.A. Felipe-Sesé, J.A. López-Pérez, A. Infantes-Molina

PII: S0272-8842(16)31716-3
DOI: http://dx.doi.org/10.1016/j.ceramint.2016.09.181
Reference: CERI13841

To appear in: *Ceramics International*

Received date: 27 May 2016
Revised date: 26 August 2016
Accepted date: 26 September 2016

Cite this article as: D. Eliche-Quesada, M.A. Felipe-Sesé, J.A. López-Pérez and A. Infantes-Molina, Characterization and evaluation of rice husk ash and wood ash in sustainable clay matrix bricks, *Ceramics International*, http://dx.doi.org/10.1016/j.ceramint.2016.09.181

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

D. Eliche-Quesada[(a)]*, M.A. Felipe-Sesé [(a,b)], J.A. López-Pérez[(a)], A. Infantes-Molina[(c)]

[(a)] Department of Chemical, Environmental, and Materials Engineering. Advanced Polytechnic School of Jaén. University of Jaen, Campus Las Lagunillas s/n, 23071 Jaén, Spain

[(b)] International University of La Rioja. Gran Vía Rey Juan Carlos I, 41. 26002 Logroño (La Rioja), Spain

[(c)] Department of Inorganic Chemistry, Crystallography, and Mineralogy (Affiliate Unit of the ICP-CSIC, Faculty of Sciences, University of Malaga, Campus de Teatinos, 29071 Málaga, Spain

**Corresponding author: Tel.:+34953211861; Fax:+34953212141*

e-mail address: deliche@ujaen.es

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 ºC for 4 h, at a heating rate of 3 ºC/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