
Incorporation of rice husk ash with red mud in preparation of bricks: A preliminary investigation

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Utilization of waste materials into value added products is one of the key features of current global sustainable journey. Rice husks (RH) are the major agricultural waste materials and rich source of silica. The purpose of this research is to make clay bricks by adding rice husk ash (RHA) to enhance structural properties of fired clay bricks and produce environmental friendly green building material. Further, SiO₂ molecules present in the RHA can combine with Al and Fe available in the red clay to form a geopolymer to bring an additional strength to the bricks. RH was collected from local rice mills and burnt to obtained white colored ash. RHA was characterized by conducting FTIR, XRD and XRF testing to find out the composition, crystallinity and SiO₂ percentage. This confirmed the presence of amorphous inorganic SiO₂ around 85.2% (mass). For the testing of properties, five bricks samples were made by mixing RHA to clay from 0% to 40% w/w ratios along with the control. After following the conventional brick making process, the prepared fired bricks were subjected to several tests including water absorption test and compressive strength test. According to these test results, sample containing 10% w/w rice RHA has the highest compressive strength and the lowest water absorption, also shows better properties compared to conventional bricks. In this preliminary study, it can be concluded that by adding RHA into the red clay can produce strong, light weight and environmental friendly clay bricks as useful construction materials.

Keywords: Agricultural waste, Clay bricks, Rice-husk ash

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