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Exploratory Study on the Effect of Waste Rice Husk and Sugarcane Bagasse Ashes in Burnt Clay Bricks

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Abstract

Burnt clay brick is the commonly used construction material across the world. In most of countries including Pakistan, brick manufacturing is ignorant of modern day improvements and innovations. Utilization of waste materials in manufacturing of clay bricks is not only helpful in disposal of wastes safely but also imparts useful properties to the burnt clay bricks. In this study, the use of waste materials (rice husk ash and bagasse ash) for brick production has been attempted. Clay bricks were prepared incorporating 5% by clay weight of rice husk ash (RHA) and sugarcane bagasse ash (SBA) to investigate the mechanical and durability properties. It was observed compressive strength and modulus of rupture decreased with incorporation of RHA and SBA in burnt clay brick. However, compressive strength and modulus of rupture satisfied the requirements of building bricks according to Pakistan building code and ASTM standard guidelines. Furthermore, clay bricks incorporating RHA and SBA can be potentially used in the production of lighter bricks. Lighter weight of bricks can result in reduction of structural loads and helpful in achieving economy. Test results confirmed the use of clay bricks incorporating RHA and SBA as moderate weather resistive bricks. Moreover, resistance against efflorescence was improved after incorporating RHA and SBA. The microstructure was examined by scanning electron microscopy (SEM) and found that burnt clay bricks incorporating RHA and SBA were more porous than burnt clay bricks. Based on this study, it can be concluded that the addition of

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