

A Green Concrete Mixture Using Rice Husk As Partially Cement Replacement

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Abstract. Egypt's agricultural waste production has increased significantly in recent decades, leading to improper disposal methods and environmental pollution. Rice husks are the most common agricultural solid waste in Egypt, contributing to "black clouds" and causing health issues. On the other hand, Cement, a crucial component of construction materials, generates unsound residues and greenhouse gas emissions. Green concrete with rice husks could be a profitable solution for environmentally sound construction, reducing cement consumption and increasing the durability and integrity of new materials. This study investigates the use untreated rice husk fibres with a concrete mixture, avoiding burning and contributing to environmental pollution. Experimental work involved partial substitution of cement with rice husks in 4%, 6%, and 8%. The results showed that partially replacing cement with 4% untreated rice husk preserved reasonable compressive strength of 16.11 MP, improved thermal insulation by reducing thermal conductivity by 2.69%, and lowered production costs by 2.25%.

Keywords: Rice Husk (RH), Cement, Green concrete, Black cloud, carbon emission (co2).

