Experimental Research on the Strength Properties of Concrete with Recycled Aggregate, Pond Ash, and Rubber Powder Replaced in Part for Concrete Materials in Standard Grades

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Abstract

Concrete, a fundamental material in modern construction, poses environmental concerns due to its sig mitigate this impact, researchers explore alternative materials like fly ash, GGBS, alcofine, and rubber pow This study examines the durability and strength of concrete that contains recycled aggregate, pond ash Waste rubber, abundant from industrial and automotive sources, poses disposal challenges. Pond ash, a by recycled aggregate from demolished structures offer environmentally friendly alternatives. The study exam on concrete, aiming for lightweight yet robust compositions. Experimentation involves varying proportion and recycled aggregate in concrete grades M30 and M40. Parameters like compressive strength, splitting t and flexural strength are assessed after 28 days of curing. Results indicate that a mix containing 5% wast 20% recycled aggregate yields optimal compressive strength and improved water penetration. Howeve structural applications of these concrete blends are hindered by lower compressive strength compare Further research is needed to enhance the structural viability of compositions containing waste rubb aggregate.

In conclusion, this study sheds light on the potential of incorporating waste rubber, pond ash, and recyc reduce environmental impact while maintaining performance. Optimizing material proportions and addres be crucial for broader adoption in structural applications.

Keywords: Waste rubber powder, pond ash, recycled aggregate, cement, partially replaced, M30 and M40 grades, Compressive strength, Splitting tensile strength, Permeability, and flexural strength test.

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