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SUITABILITY OF USING TEXTILE WASTE FOR MAKING MUD CEMENT PAVING BLOCKS, USED IN INDUSTRIAL FLOOR

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DECLARATION

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Name of Supervisor: Eng. (Mr.). S.P. Guluwita

Signature of the Supervisor: Date: 09/09/25

ABSTRACT

The construction industry is under increasing pressure to adopt sustainable alternatives to conventional building materials. This research investigates the feasibility of using mud cement composite blocks as an environmentally friendly and cost-effective solution for industrial floor paving applications. Locally sourced lateritic soil was stabilized with varying proportions of Ordinary Portland Cement (OPC) and textile waste fibers to develop blocks with improved mechanical and durability properties. A comprehensive experimental program was conducted to evaluate compressive strength, water absorption, and impact strength. Microstructural characterization was also performed to analyze the material behavior at the microscopic level. Results indicate that the incorporation of textile waste not only enhances the toughness and crack resistance of the blocks but also contributes to effective waste valorization. The optimum textile waste content was found to be 15%**,** as it provided a balance between impact resistance and mechanical strength. The optimal mix design parameters within acceptable limits for light- to medium-duty industrial flooring, while significantly reducing the carbon footprint and raw material cost. This study underscores the potential of mud cement blocks as a sustainable paving solution and contributes valuable insights into the development of green construction materials for industrial infrastructure.

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P.M.W.P. Sampath.

TABLES OF CONTENT

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

Abbreviation	Description
ACI	American Concrete Institute
OPC	Ordinary Portland Cement
BS	British Standard
BS EN	British Standard European Norm
ASTM	American Society for Testing and Materials
FRC	Fiber-Reinforced Concrete
ESD	Electrostatic Discharge
PET	polyethylene terephthalate
RPET	Recycled Polyester
UTM	Universal Testing Machine
FCB	First Crack Blow
UCB	Ultimate Crack Blow
INPB	Increase in Number per Blow