INITIAL INVESTIGATION ON IMPROVING THE PHYSICOMECHANICAL PROPERTIES OF CLAYEY SAND USING CLAY BRICK DUST

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Source IIUM ENGINEERING JOURNAL
Volume: 26 Issue: 3
DOI: 10.31436/iiumej.v26i3.3821

Published SEP 2025

Indexed 2025-09-28

Document Type Article

Abstract Clayey sand is commonly considered unsuitable for construction due to its high compressibility, low shear strength, and susceptibility to erosion and settlement. The research focuses on enhancing the physical and mechanical properties of the soil by incorporating clay brick dust (CBD) at varying proportions of 15, 20, and 25% by weight. A comprehensive laboratory testing was conducted, including particle size distribution, Atterberg limits, moisture content, Standard Proctor compaction, and California Bearing Ratio (CBR). These tests were used to assess the physical

and mechanical behaviour of both untreated and treated soils. The results indicate that the inclusion of CBD significantly improves the soil's strength, as reflected by increased CBR values. However, higher percentages of CBD lead to reductions in moisture content and maximum dry density. The study concluded that the optimum percentage of CBD mixture was found to be 20% by weight, offering the best balance between improved strength and acceptable compaction properties. This study concludes that CBD is a viable and sustainable material for stabilizing clayey sand, making it more suitable for geotechnical and construction applications.

Keywords **Author Keywords:** Clayey sand; Soil Stabilization; Clay brick dust; Geotechnical Properties; California Bearing Ratio (CBR); Compaction characteristics

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Categories/ Classification Research Areas: Engineering

Web of Science Categories Engineering, Multidisciplinary

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