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STRENGTH CHANGES OF HIGH PLASTICITY CLAYS REINFORCED WITH WASTE LIGNITE POWDER UNDER THE EFFECT OF FREEZING-THAWING

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Abstract

Nowadays, the amount and variety of waste/residue material is increasing rapidly due to the increase in human population and technological developments. When these wastes/residues are not stored they cause all kinds of environmental pollution such as air, water, and soil. Utilization of solid waste is very important in terms of reusing it as raw material. In Türkiye, which is in a seismically active location, the improvement and use of these problematic soils and the sensitivity and care that should be shown are much more important. In the studies carried out in the last twenties, waste/residue materials, natural rocks, or minerals are used as alternative additive materials in the improvement of soils and are seen as raw materials. Such additive materials are a solution for the improvement of problematic soils, considering their economic, sustainable, and environmental effects. With this study, an attempt was made to improve clayey soils by using residual lignite waste. The changes in the strength properties of clay soil samples modified with residual lignite wastes, which were ground into powder, were determined before and after freezing and thawing. XRD, SEM, and BET analyses were performed on these mixture samples, and the results were evaluated.

Key words: clay, freeze-thaw, lignite, strength

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